SERVICE MANUAL

EX330/EW330/EX330(1W)/EW330(1W)

Date	Revise Version	Description
2008.04.25	V1.0	Initial Issue
2008.05.26	V2.0	Add EW330
2008.08.01	V3.0	Modify CH2, CH3
2010.04.08	V4.0	Add EW330(1W)/EX330(1W)

Prefared: Mina Check: Approved:

Comparison List

Parts	EW330	EW330(1W)	EX330	EX330(1W)
USER'S MANUAL	36.8AG01G001	36.8GV01G001	36.89Z01G001	36.8GW01G001
PCBA MAINBOARD	80.8AG01G001	80.8GV01G001	80.89Z01G001	80.8GW01G001
ENGINE MODULE	70.8GW08GR01	70.8GV06GR01	70.89Z13GR01	70.8AG09GR01
DMD	48.8BR01G001		48.87M01G001	
ROD MODULE	70.8AH13GR01		70.89S21GR01	
Lamp driver	70.89Z19GR01	70.8FN19GR01	70.89Z19GR01	70.8FN19GR01
TOP COVER MODULE	70.8AG07GR01	61.89Z01G021	70.89Z15GR01	61.89Z01G001
COLOR WHEEL Module	70.8AH14GR01		70.88N19GR01	
PHOTO SENSOR BOARD	80.89U04G001	80.89U04G011	80.89U04G001	80.89U04G011

Preface

This manual is applied to EX330/EW330/EX330(1W)/EW330(1W) projection system. The manual gives you a brief description of basic technical information to help in service and maintain the product.

Your customers will appreciate the quick response time when you immediately identify problems that occur with our products. We expect your customers will appreciate the service that you offer them.

This manual is for technicians and people who have an electronic background. Please send the product back to the distributor for repairing and do not attempt to do anything that is complex or is not mentioned in the troubleshooting.

Notice:

The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in future edition.

EX330/EW330/EX330(1W)/EW330(1W) Service Manual

Manual Version 4.0

Table of Content

Chapter 1

Introduction

1-1 Highlight

No	Item	Description
1	Technology	● 0.55” Type-X XGA DMD chip (EX330/EX330(1W)) ● 0.65” Type-A WXGA DMD chip (EW330/EW330(1W))
2	Dimension (WxDxH)	● 206 mm x153 mm x 64 mm (EX330) ● 205.5 mm x156 mm x 64 mm (EW330/EW330(1W)/EX330(1W))
3	Weight	● 2.4 lbs (EW330/EX330/EX330(1W)) ● 2.6 lbs (EW330(1W))
4	Power Supply	● 100V ~ 240V +/- 10% 50 ~ 60Hz
5	Power Consumption	● For EW330 / EX330 • 225W (Maximum). Standby mode - < 10 Watt 110V AC ● For EW330(1W) / EX330(1W): • Normal: 208W (TYP). 230W (MAX) Standby mode - < 1 Watt 110V AC • ECO: 165W (TYP). 181W (MAX) Standby mode - < 1 Watt 110V AC
6	Resolution	● 1024x768 (EX330/EX330(1W)) ● 1280x800 (EW330/EW330(1W))
7	Throw ratio	● For EX330/EX330(1W)/EW330(1W): • 1.95~2.15 distance/width ● For EW330: • 1.55~1.7 distance/width
8	Projection lens	F# 2.41~2.55, f = 21.8~24.0 mm ,1.10X Manual zoom/focus
9	Lamp life	● 3000 Hours (Standard-Mode) ● 4000 Hours (ECO-Mode) (for EW330/EX330) ● 5000 Hours (ECO-Mode) (for EW330(1W)/EX330(1W))
10	Color wheel	● 5 Segments , 2x (R80Y30G84W90B76), 40mm diameters.
11	Lamp	● Osram E17.6 165W

No	Item	Description
12	Offset	● For EW330(1W) / EX330(1W): 115%±5% ● For EX330: 115% ● For EW330: 112.4% +/- 5%
13	Keystone correction	● +/- 18 vertical keystone
14	System Controller	● DDP2230 ASIC Controller
15	Temperature	● Operating: 5 - 40°C(ECO mode) 5 - 35°C(Full power mode) ● Storage: - 20 - 60°C
16	Altitude	● Operating: 0~2,500 ft, for 5°C~40°C (ECO mode) 0~2,500 ft, for 5°C~35°C (Full mode) 2,500~5,000 ft, for 5°C~30°C 5,000~10,000 ft, for 5°C~25°C
17	Video compatibility	● NTSC: M (3.58MHz), 4.43 MHz, 480i/p @60Hz ● PAL: B, D, G, H, I, M, N, 576i/p @50Hz ● SECAM: B, D, G, K, K1, L ● HDTV: 480p, 576p, 720p, 1080i (50/60 Hz)
18	Input connections	● VGA-in :1x D-Sub 15 pin connector for analog RGB/component vide HDTV and supports SCART RGB signal (via an adapter for Europe only) ● 1x HDMI port (supports DVI-D via adapter) ● 1x Composite Video ● 1x mini-in 4 pin connector for S-Video ● 1x USB port

1-2 Compatible Mode

Analog

Compatibility	Resolution	V-Sync [Hz]
VGA	640 x 480	60
	640 x 480	72
	640 x 480	75
	640 x 480	85
	720 x 400	70
	720 x 400	85
SVGA	800 x 600	56
	800 x 600	60
	800 x 600	72
	800 x 600	75
	800 x 600	85
	832 x 624	72
XGA	1024 x 768	60
	1024 x 768	70
	1024 x 768	75
	1024 x 768	85
	1152 x 864	60
	1152 x 864	70
	1152 x 864	75
	1152 x 864	85
WXGA	1280 x 720	50
	1280 x 720	60
	1280 x 768	60
	1280 x 800	60
SXGA	1280 x 1024	60
	1280 x 1024	75
	1280 x 1024	85
SXGA+	1400 x 1050	60
MAC LC 13	640 x 480	66.66
MAC II 13	640 x 480	66.66
MAC 19	1024 x 768	75
MAC	1152 x 870	75.06
MAC G4	640 x 480	60
i MAC DV	1024 x 768	75
	1152 x 870	75
	1280 x 960	75

Digital

Compatibility	Resolution	V-Sync [Hz]
VGA	640 x 480	60
	640 x 480	72
	640 x 480	75
	640 x 480	85
	720 x 400	70
	720 x 400	85
SVGA	800 x 600	56
	800 x 600	60
	800 x 600	72
	800 x 600	75
	800 x 600	85
	832 x 624	72
XGA	1024 x 768	60
	1024 x 768	70
	1024 x 768	75
	1024 x 768	85
	1152 x 864	60
	1152 x 864	70
	1152 x 864	75
	1152 x 864	85
WXGA	1280 x 768	60
	1280 x 800	60
SXGA	1280 x 1024	60
	1280 x 1024	75
	1280 x 1024	85
SXGA+	1400 x 1050	60
MAC G4	640 x 480	60
	640 x 480	70
480i/p	720 x 480	60
576i/p	720 x 576	50
720p	1280 x 720	50
	1280 x 720	60
1080i	1920 x 1080	50
	1920 x 1080	60

Chapter 2

Disassembly Process

2-1 Equipment Needed & Product Overview

1. Screw Bit (+) :105
2. Screw Bit (+) :107
3. Screw Bit (-) :107
4. Hex Sleeves 5 mm
5. Tweezers
6. Projection

** Before you start: This process is protective level II. Operators should wear electrostatic chains.*

** Note: If you need to replace the main board, you have to get into service mode and record the lamp usage hour.*

As the disassembly process of EW330/EX330/EW330(1W)/EX330(1W) is the same, we take EX330 for example here.

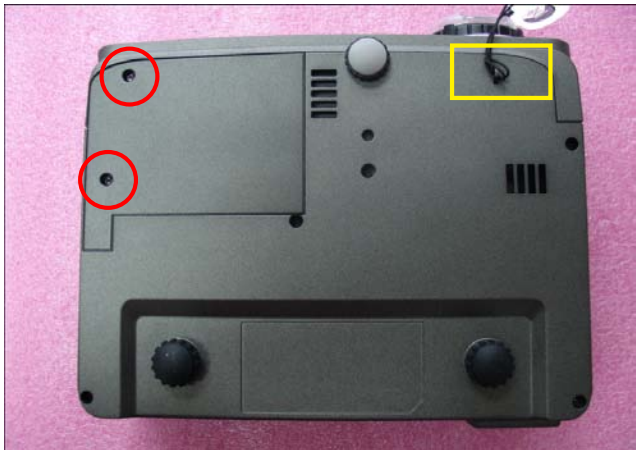





2-2 Disassemble Lens Cap Module and Lamp Cover Module

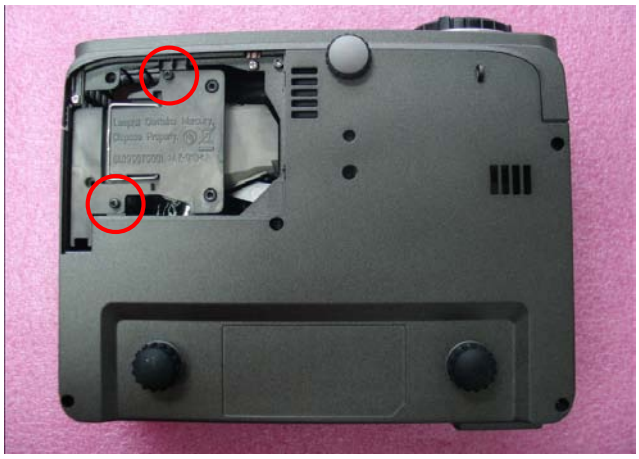
1. Unfasten the Lens Cap Wire (as yellow square) to take out Lens Cap Module.

2. Unscrew 2 screws (as red circle) to disassemble the Lamp Cover Module.



2-3 Disassemble Lamp Module

1. Unscrew 2 screws ,then pull out the Lamp Module.



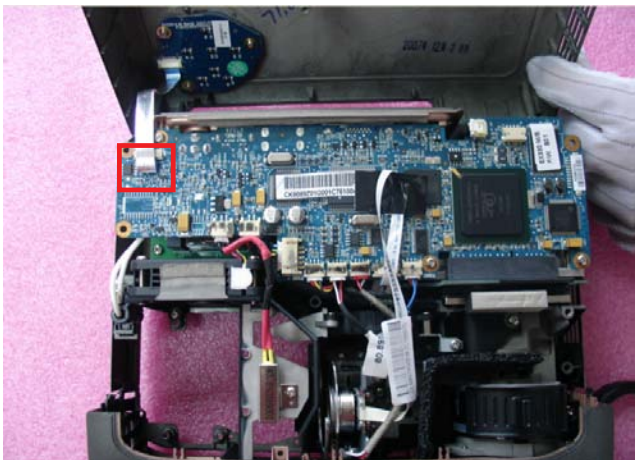
2-4 Disassemble Top Cover

1. Unscrew 4 long-screws (as red circle).

2. Unscrew 1 screw (as yellow circle).

Note: - You should use tweezers to uncover the EMI (as yellow square),then unscrew the screw.

3. Unplug FPC cable to disassemble Top Cover Module.



2-5 Disassemble Keypad Board and Keypad

1. Unscrew 3 scerws (as red circle) on Top Cover.

2. Separate Keypad Module.

Note: - In order to avoid circuit between top cover and LED,when assemble the unit, you should make sure the 3 washer flats (as blue circle) past on 3 LEDs to cap the LED Pin.

2-6 Disassemble Focus Ring

1. Rotate by anti-clockwise to take off Focus Ring.

Note: - When you disassemble the Focus Ring, you should make sure the 3 screws (as yellow square) placed in the 3 hooks (as red circle),then take off it.

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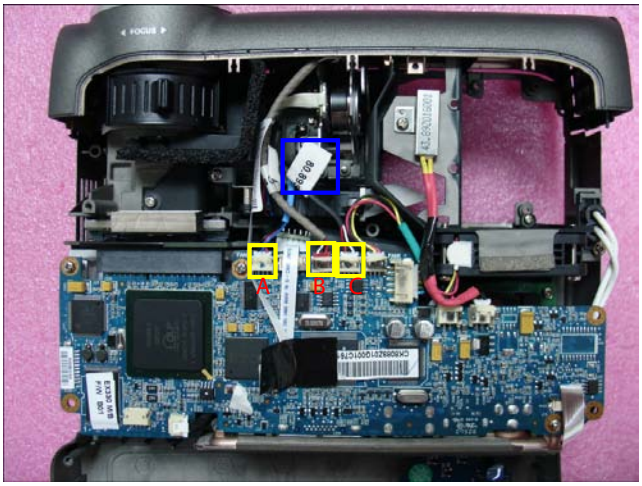
2-7 Disassemble Front Cover

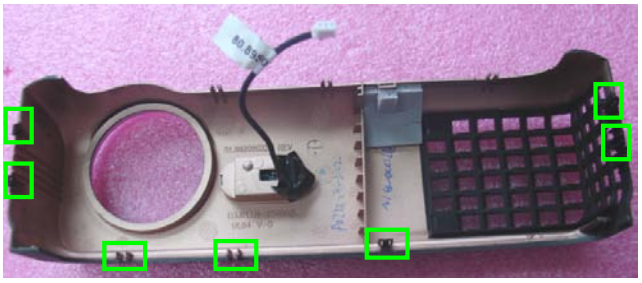


1. Unplug 1 connector (as yellow square marked C) to disassemble Front Cover.

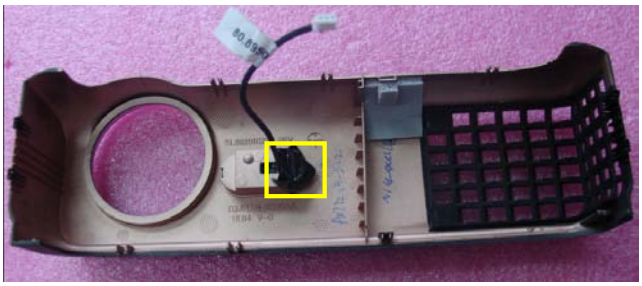
Note: - When assemble unit,you should take off IR Label(as blue square),and add Cabel-tie to fixed A,B,C (as yellow square)three cabel to avoid IR cable interference with CW issue.

A: Blower-Main Board cabel
B: Photo Sensor cabel
C: IR cabel

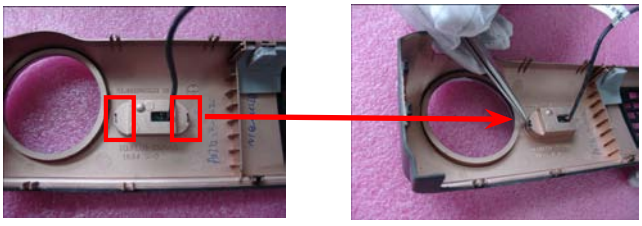
- Take care of the tenons (as green square) when disassemble Front Cover.



2-8 Disassemble IR Sensor Board and IR Sensor Cover



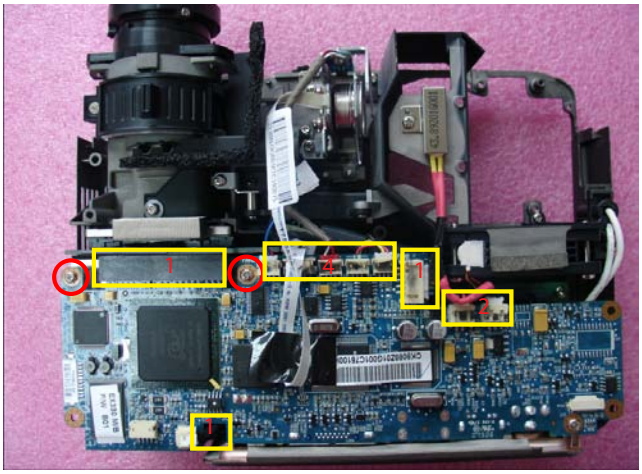
1. Take off black tape (as yellow square).



2. Use tweezer to press the tenons (as red square) to take out the IR Sensor Board and IR Sensor Cover.

2-9 Disassemble Main Board Module

1. Unscrew 2 screws (as red circle) and Unplug 9 connectors(as yellow square) to disassemble Main Board.



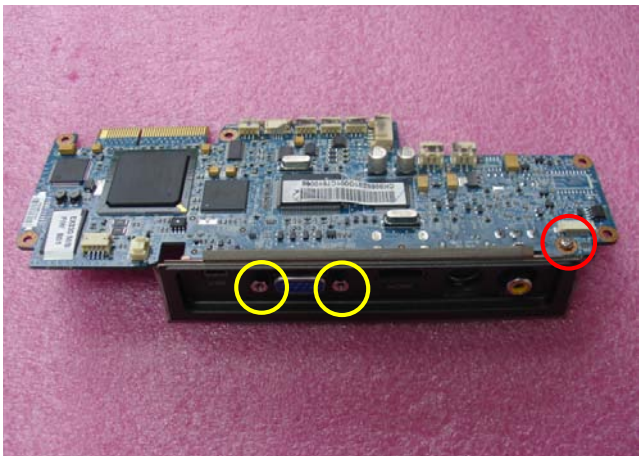
Note: - *The quantity of connector are writed in each square.*

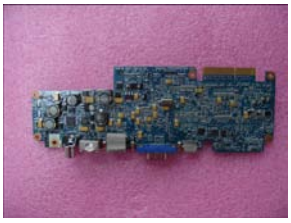
- *Make sure cables plug into the correct ports when assembling the unit.*

- *Make sure cables plug into the correct ports when assembling the unit.*

2-10 Separate Main Board and Rear Cover

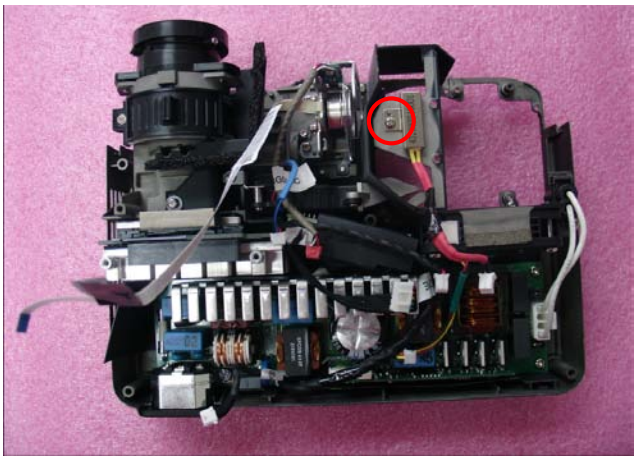
1. Unscrew 1 screw (as red circle) and unscrew 2 screws (as yellow circle) to separate Main Board and Rear Cover.

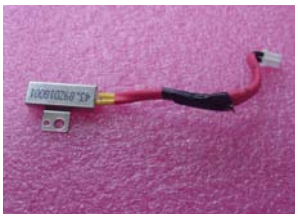




2-11 Disassemble Thermal Switch

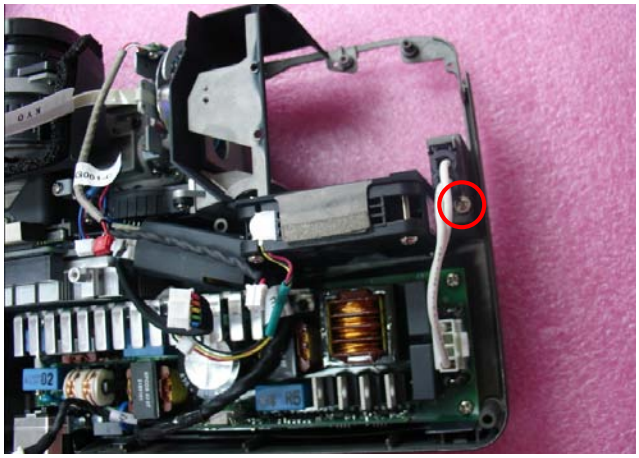
1. Unscrew 1 screw (as red circle) to disassemble Thermal Switch.





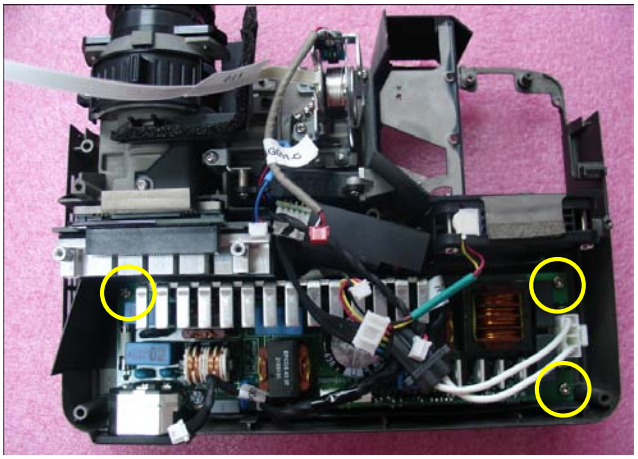
2-12 Disassemble Ballast Module

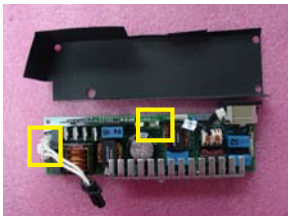
1. Unscrew 1 screw (as red circle) unfasten Lamp-Ballast Cable.

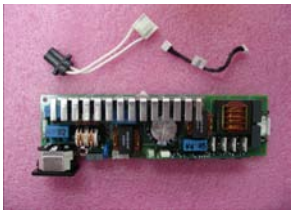


2. Uscrew 3 screws (as yellow circle) to disassemble Ballast.

3. Unplug 2 connectors (as yellow square).



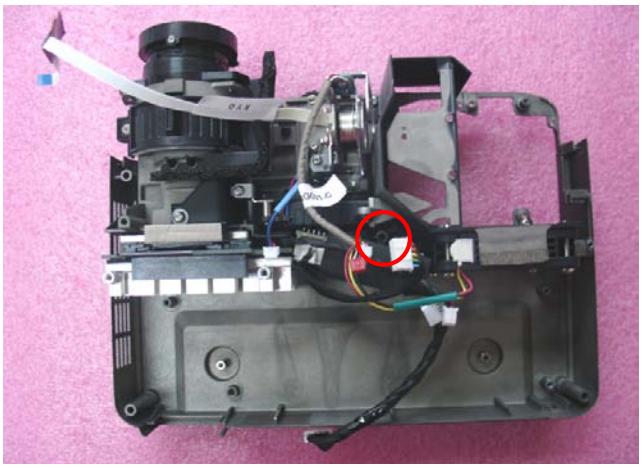


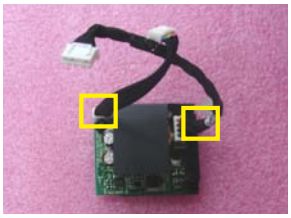


2-13 Disassemble DC-DC Module

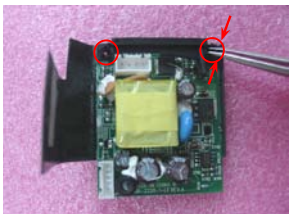
1. Unscrew 1 screw (as red circle) to disassemble DC-DC Module.

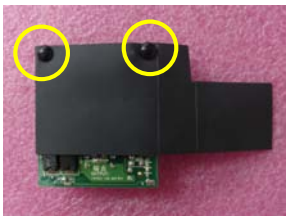
2. Unplug 2 connectors (as yellow square).



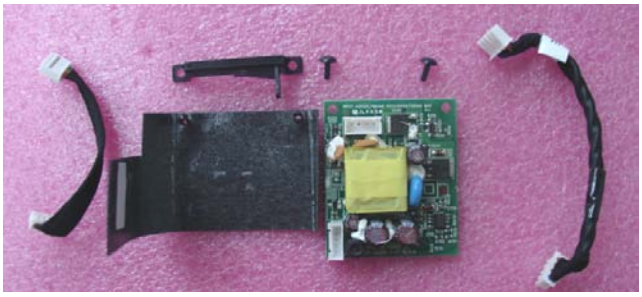


2. Use tweezer to press the tenons as red arrow direction.



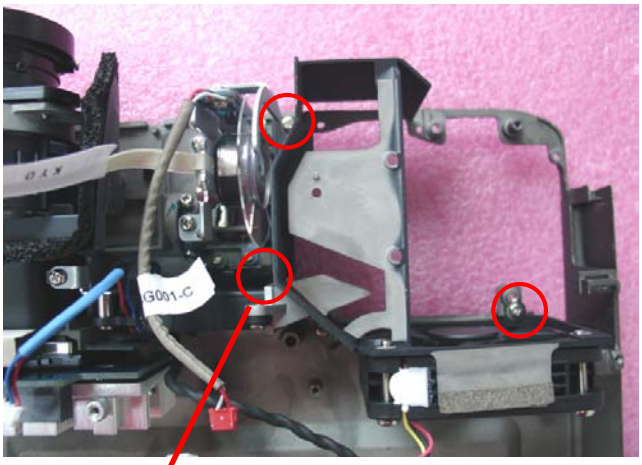


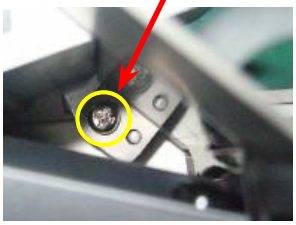
3. Take off 2 caps (as yellow circle).



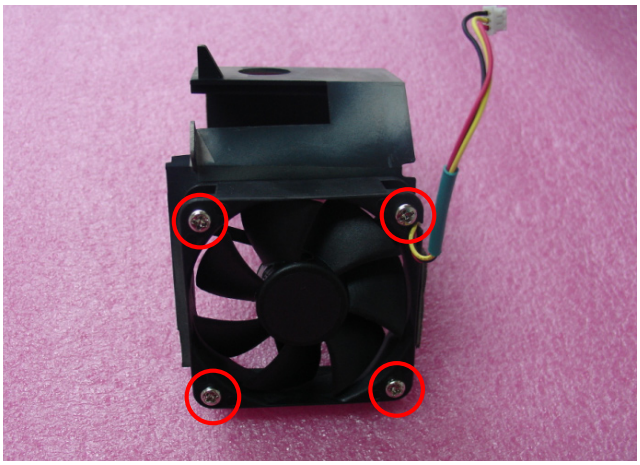
2-14 Disassemble Fan Module

1. Unscrew 3 screws (as red circle) to disassemble Fan Module and Color Wheel Vent.





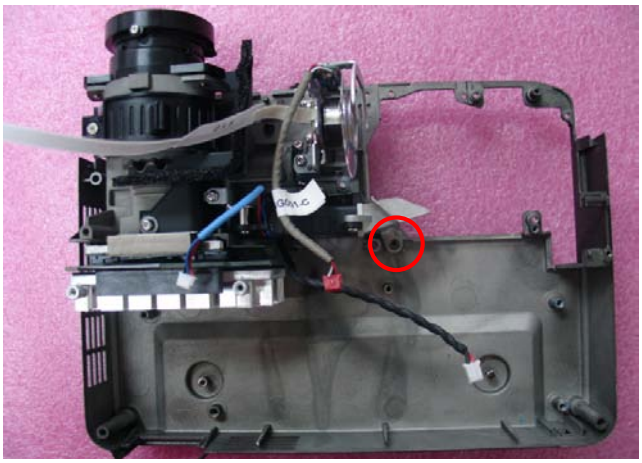
2. Unscrew 4 screws (as red circle) to separate Fan Module.

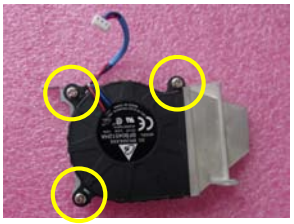


2-15 Disassemble Blower Module

1. Unscrew 1 screw (as red circle) to disassemble Blower Module.

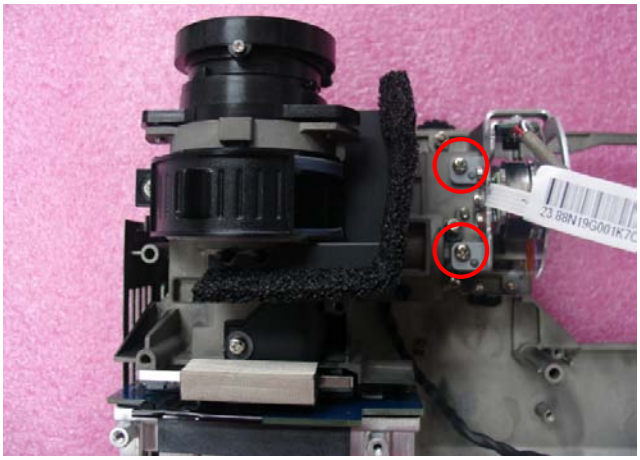
2. Unscrew 3 screws (as yellow circle) to separate Blower Module.





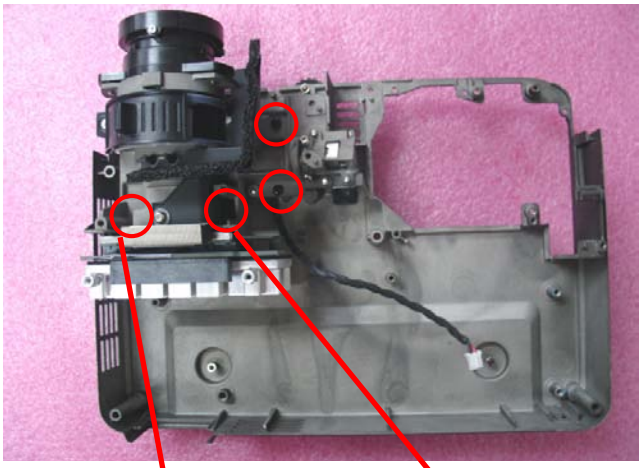
2-16 Disassemble Color Wheel Module

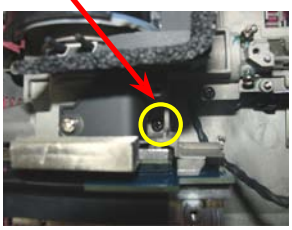
1. Unscrew 2 screws to disassemble Color Wheel Module.



2-17 Disassemble Engine Module

1. Unscrew 4 screws (as red circle) to disassemble Engine Module.

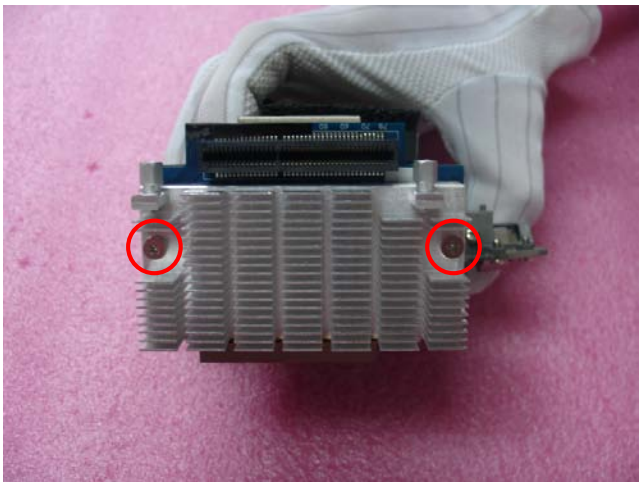


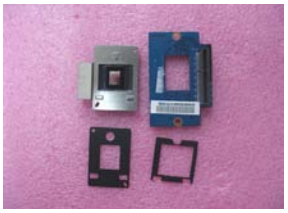


2-18 Disassemble Heat Sink,DMD Board and DMD Chip

1. Unscrew 2 screws.

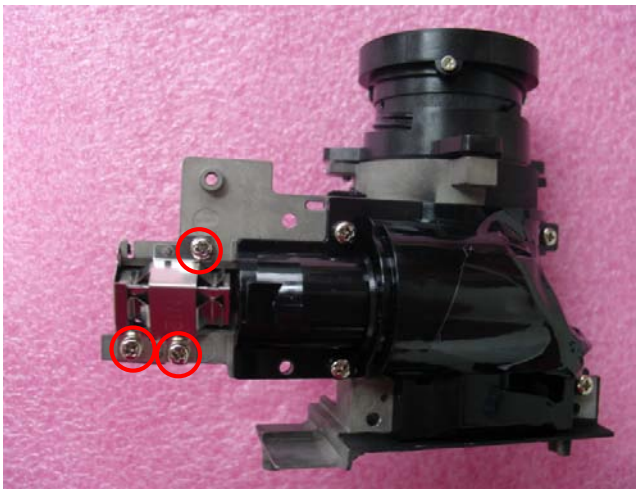
2.Take off Heat Sink,DMD Board and DMD Chip.





2-19 Disassemble Rod Module

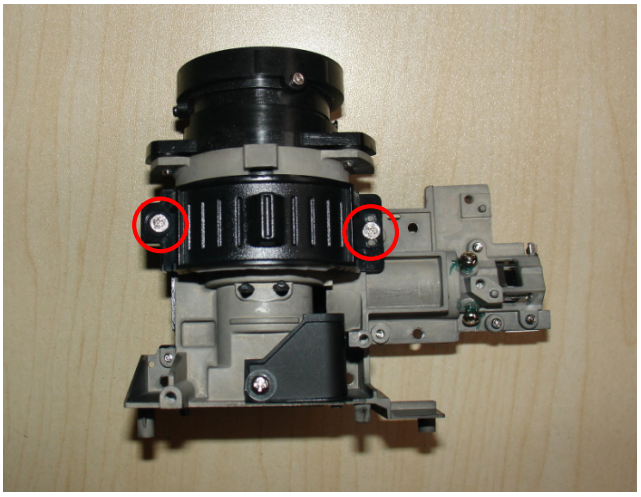
1. Unscrew 3 screws to disassemble Rod Module and Rod Bracket.



2-20 Disassemble Zoom Ring Module

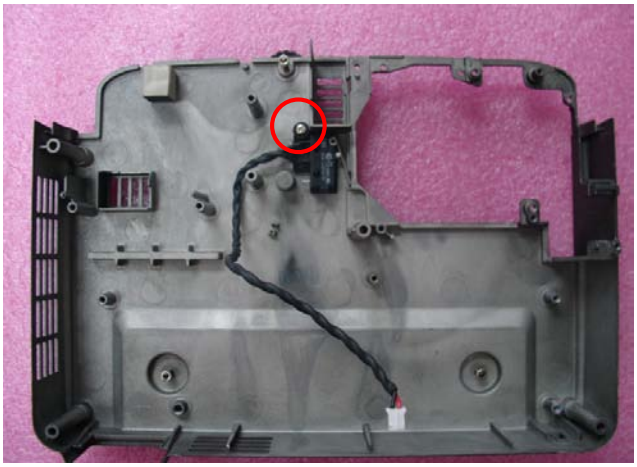
1. Unscrew 2 screws to disassemble Zoom Ring Module.

2. Separate Zoom Ring and Zoom Ring Holder.

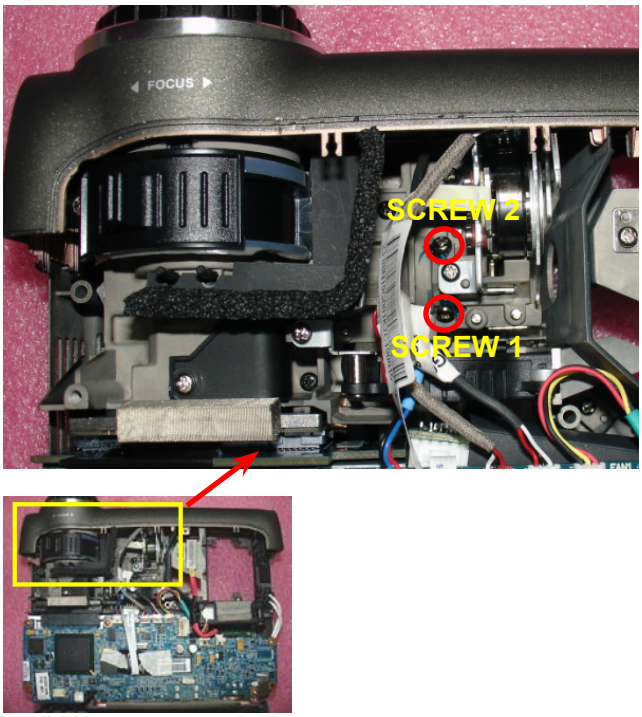


2-21 Disassemble Interlock Switch

1. Unscrew 1 screw to disassemble Interlock Switch.



2-22 Rod Adjustment



1. Environment adjustment
   - The distance between the engine and the screen is 2.4M.
   - This process should be done at a dark environment. (under 5 Lux)

2. Procedure adjustment
   - Change the screen to “white screen.”
   - Adjust the screws by using the rod on the engine module to readjust the image.
     If there are shadow at “Top” & “Bottom” side of the screen, adjust “Screw 1” to adjust Rod position.
   - If there are shadow / yellow light / blue light at “Lift” &“Right” side of the screen, adjust “Screw 2” to adjust Rod position.
   - “Screw 1” should be adjusted first, then “Screw 2 “.

   (adjust until the yellowish or bluish parts disappeared.)

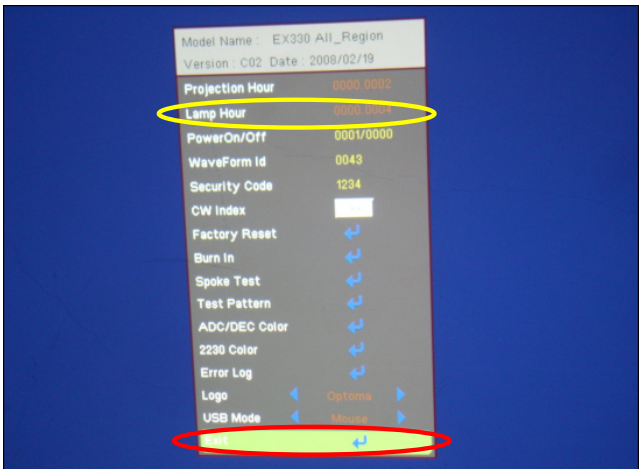
3. Abnormal image inspection

- It should not have any abnormal color at the rim of the image by estimating through the eyes.

Note: - To avoid over adjust the rod.

- After the operation,please use the glue to fixed the screws.

2-23 Re-write Lamp Hour and Projection Hour

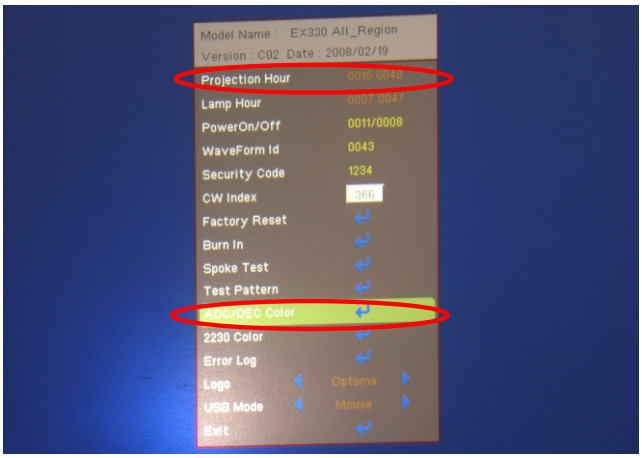


1. Get into service mode
   - Press “Power->Left->Left->Up” to get into service mode.

2. Re-write Lamp Hour
   - Use “Up” or “Down” key to select “Exit”.
   - Use “Left” or “Right” key to re-write the lamp hour.

Note: Left key = decrease lamp hour

Right key=increase lamp hour



3. Re-write Projection Hour
   - Use “Up” or “Down” key to select “ADC/DEO Color”.
   - Press “Right” button 10 times,then use “Left” or “Right” key to re-write the Projection Hour.

Note: Left key = decrease Projection Hour

Right key=increase Projection Hour

4. Use “Up” or “Down” key to select “Exit”, press “Enter” to exit service mode.

Chapter 3

Troubleshooting

3-1 LED Lighting Message

Message	Power/Standby LED (Green/Red)	Temp-LED (Red)	Lamp-LED (Red)
Standby State (input power cord)	Amber	O	O
Power on (Warming)	Flashing Green	O	O
Lamp Lighting	Green	O	O
Error (Over Temp)	O	*	O
Error (Fan Fail)	O	Flashing (1sec on,1sec off)	O
Error (Lamp Fail)	O	O	*
Error (Color Wheel Fail)	Flashing (1sec on,1sec off)	O	O

Note:Steady Light: * *No Light:* O

3-2 Main Procedure

No	Symptom	Procedure
1	No Power	- Ensure the Power Cord and AC Power Outlet are securely connected - Check Lamp Cover and Interrupt Switch - Ensure all connectors are securely connected and aren't broken - Check Ballast - Check DC-DC - Check Main Board
2	Auto Shut Down	- Check LED Status a. Lamp LED Light, Temp LED(off), Power LED(off) - Check Lamp - Check Ballast - Check Main Board b. Temp LED Light or Flashing, Lamp LED(off), Power LED(off) - Check Thermal Switch - Check Fan c. Power LED Flashing, Temp LED(off), Lamp LED(off) - Check Color Wheel - Check Photo Sensor
3	No Image	- Ensure the Signal Cable and Source work (If you connect multiple sources at the same time, use the "Source" button on the control panel to switch) - Ensure all connectors are securely connected and aren't broken - Check Main Board - Check DMD Board - Check DMD Chip - Check Engine Module

No	Symptom	Procedure
4	No Light On	- Ensure all connectors are securely connected and aren't broken - Check Lamp Module - Check Ballast - Check DC-DC - Check Main Board
5	Machanical Noise	- Check Color Wheel - Check Fan Module
6	Line Bar/Line Defect	- Check if the Main Board and the DMD Board are assembled properly - Check Main Board - Check DMD Board - Check DMD Chip
7	Image Flicker	- Do "Reset(All data)" of the OSD Menu - Ensure that the signal cables and source are work as well - Check Lamp Module - Check Color Wheel - Check DMD Board - Check Main Board
8	Color Abnormal	- Do "Reset(All data)" of the OSD Menu - Adjust Color Wheel Index - Check Main Board - Check DMD Board - Check Color Wheel
9	Poor Uniformity/ Shadow	- Ensure the projection screen without dirt - Ensure the projection lens is clean - Ensure the Brightness is within spec - Check rod alignment - Check Engine Module

No	Symptom	Procedure
10	Dead Pixel/Dust (Out of spec.)	- Ensure the projection screen without dirt - Ensure the projection lens is clean - Clean DMD Chip and Engine Module - Check DMD Chip - Check Engine Module
11	Garbage Image	- Ensure that the signal cables and source work as well. - Check Main Board - Check DMD Board
12	Remote Control/ Control Panel Failed	- Remote Control a.Check Battery b.Check Remote Controller c.IR receiver d.Check Main Board - Control Panel a.Check FPC b.Check keypad c.Check Main Board
13	Function Abnormal	- Do “Reset(All data)” of the OSD Menu - Check Main Board - Check DMD Board

Chapter 4

Function Test & Alignment Procedure

4-1 Test Equipment Needed

- IBM PC with XGA resolution
- DVD player with Multi-system (NTSC/PAL/SECAM), “S-Video” , “Composite” and "HDMI".
- HDTV Source (480P , 720P , 1080i)
- Minolta CL-100
- Quantum Data 802B or CHROMA2327 (Color Video Signal & Pattern Generator)
- After changing parts, check the information below.

4-2 Service Mode

1. Turn on the projector
2. Do the following actions sequentially to enter service mode menu
   (1) Press " Power -> Left -> Left -> Up" button sequentially.
   (2) Service mode will be shown.
   (3) After confirming the configuration, press "Exit" to exit.

4-3 OSD Reset

1. After final QC step, we have to erase all saved change again and restore the OSD default setting. The following actions will allow you to erase all end-users' settings and restore the default setting:
   (1) Please enter OSD menu.
   (2) To execute "Reset" function.

4-4 Test Condition

- Circumstance brightness: Dark room less than 10.0 lux.
- Inspection distance: 1.8m~2.5m functional inspection.
- Screen size: 60 inches diagonal
- After repairing each unit, the unit should be run-in (refer to the table below)

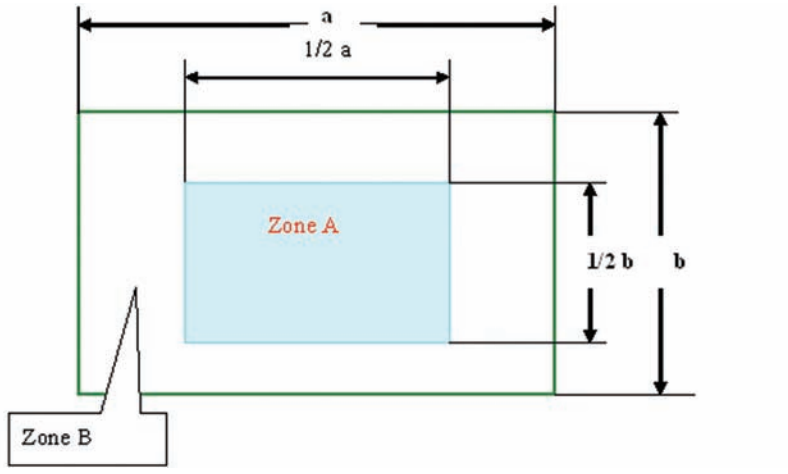
Symptom	Run-in Time
Normal repair	2 hours
NFF	4 hours
Auto shut down	6 hours

- Enter Burn-In Mode

** Cycle setting is based on the defect symptoms. ie: If it is NFF, the run-in time is 4 hours. You have to set the lamp on for 50 min. and lamp off for 10 min for 4 cycles.*

Press " Power -> Left -> Left -> Up"	
Choose Burn-In Test > enter	
Lamp On (Min)	Press right key to adjust the time (50)
Lamp Off (Min)	Press right key to adjust the time (10)
Set burn in cycle	Press right key to adjust the cycle
After setting up the time, choose Burn-In mode and hit enter	

Screen Defects (While replacing DMD Chip, DMD BD and MB)



< Figure: Zone A &B Definition >

Defect specification table

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Gray 10	A+B=0
2	Dark pixel(dots)	White pattern	A+B≤7
3	Unstable pixel (dots)	Any pattern	A+B=0
4	Adjacent dark pixel (dots)	Any pattern	A+B=0
5	Dark blemish (Dirty)	Blue 60 pattern	A+B≤4 (diameter <1 inch)
6	Bright blemish (Dirty)	Gary 10 pattern	A+B≤4 (diameter <1 inch)
7	Bright dot on frame	Gary 10 pattern	≤1

4-5 Test Inspection Procedure

Charge parts/ Update	M/B	FW	Color Wheel	Lamp Module	Engine Module	ROD Module
Version Update	v	v				
Color Wheel Index	v		v			
Reset lamp hour				v		
OSD Reset	v	v				
EDID	v					
Re-write Lamp Hour Usage	v					
ROD Adjustment					v	v

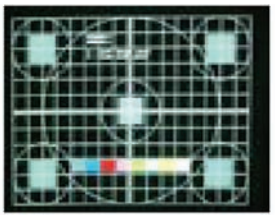
4-6 PC MODE

Note: Test Signal:analog 1280x800*@60Hz(EW330/EW330(1W)), analog 1024x768@60Hz(EX330/EX330(1W)).Take EX330 for example.*

1. Frequency and tracking boundary

Procedure

- Test equipment: video generator.
- Test signal: analog 1024 x 768@60Hz
- Test Pattern: general-1 or master
- Check and see if the image sharpness is well-performed.
- If not re-adjust by the following steps:
  (1) Select "Frequency" function to adjust the total pixel number of pixel clock in one line period.
  (2) Select "Tracking" function and use right or left arrow key to adjust the value to minimize video flicker.
- Adjust Resync or Frequency/Tracking/H. Position/V. Position to the inner screen.



General-1

Master

Inspection item

- Eliminate visul wavy noise by Rsync, Frequency or Tracking selction.
- Check if there is noise on the screen.
- Horizontal and vertical position of the vedio should be adjustable to the screen frame.

Criteria

- If there is noise on the screen, the product is considered as faliure product.
- If there is noise on the screen, use auto or manual “frequency” function or “tracking” function to adjust the screen.
- The PC mode functionally sure be workable include support format with frequency and auto detected functional will be workable.

2. Light Leak

Full black

Procedure
- Test equipment: video generator
- Test signal: analog 1024 x 768 @60Hz
- Test pattern: Black pattern
- Check if the light leaks.
  * Light leak on reflective edge, eye-catcher, bond wires and exposed metal.

Inspection item
- Light leak check.

Criteria
- The pattern cannot accept the color level of the leakage is brighter than full black pattern.
- Using Black pattern, the light leak is acceptable when it appears out of the zone C.
- The light leak appears in the zone C within the frame of any pattern, please use gray 10 pattern to judge it.
- The pattern cannot accept the color level of the ineffective leakage is brighter than gray 10 pattern.

  Note: The defect criteria follows TI specification.

Gray 10

3.Bright pixel

Procedure
- Test equipment: video generator.
- Test signal: analog 1024x768@60Hz.
- Test Pattern: Gray10 pattern

Inspection item
- Bright pixel check.

Criteria
- Bright pixel is unacceptable when it appears on zone A and zone B.
- It is acceptable when it has 1 bright pixel on the frame of any pattern.
- Ref. Defect specification table

  Note: The defect criteria follows TI specification.

4. Dark pixel

Procedure
- Test equipment: video generator.
- Test signal: analog 1024x768@60Hz.
- Test Pattern: White pattern

Inspection item
- Dark pixels check.
- White pattern
- Adjacent dark pixel.

Criteria
- It is acceptable when it has 7 dead pixels on any pattern, the picture frame should not appear yellow, shadow, light blue, and other nonperforming.
- Adjacent pixel with each other is unacceptable.
- Ref. Defect specification table

  Note: The defect criteria follows TI specification.

Full white

Gray 10

5. Bright Blemish

Procedure
- Test equipment: video generator
- Test signal: 1024x768 @60Hz
- Test Pattern: Gray 10

Inspection item
- Bright blemish check

Criteria
- The bright blemish should be less or equal to 4 under gray 10 pattern.
- Ref. Defect specification table

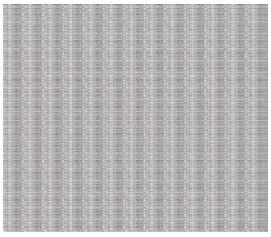
Blue 60

6. Dark Blemish

Procedure
- Test equipment: video generator
- Test signal: 1024x768 @60Hz
- Test Pattern: Blue 60

Inspection item
- Dark blemish check

Criteria
- The dark blemish should be less or equal to 4 under blue 60 pattern.
- Ref. Defect specification table



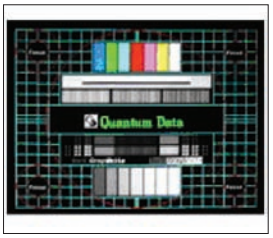
Full screen

7. Focus test

Procedure
- Test equipment: video generator.
- Test signal: analog 1024 x 768@60Hz
- Test Pattern: full screen

Inspection item
- Focus check

Criteria
- From screen 2.4 M via visual to check the focus, look at the entire screen, focus shall be clear, crisp, and sharp over the entire surface of the display pattern.(Blur word on one of the corner after adjustment is acceptable. However, the word should at least be recognizable.)



Master

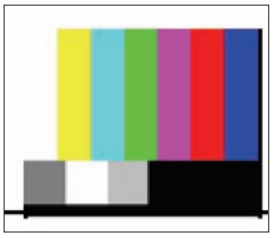
8. Color performance

Procedure
- Test equipment: video generator.
- Test signal: 720p, 1080i, 1080p
- Test Pattern: Master, 64 gray RGBW or SMPTE bar

* Please refer to 4-2 to get into service mode 1. Use 720p & 1080p signal, master pattern to do HDTV test. Color cannot discolor to purple and blue.

64 gray RGBW

Inspection item
- Check if each color level is well-functioned.
- Color saturation



SMPTE BAR

Criteria
- Screen appears normal. It should not have any abnormal condition, such as lines appear on the screen and so on.
- Color appears normal.
- It is unacceptable to have few lines flashing.
- RGBW should all appear normal on the screen and sort from R-G-B-W.
- Color levels should be sufficient and normal. (The unidentified color levels on both left and right sides should not over 4 color levels.)
- Gray level should not have abnormal color or heavy lines.
- If color appears abnormal, please get into service

mode 1 to do color wheel index adjustment.

4-7 Video Performance

Motion video

1. CVBS

Procedure	- Test equipment: DVD player
	- Test signal: CVBS
Inspection item	- Video performance test
Inspection Distance	- 1.8M ~2.5M
Criteria	- Check any abnormal color, line distortion or any noise on the screen.

2. S-Video

Procedure	- Test equipment: DVD player
	- Test signal: S-Video
Inspection item	- Video performance test
Inspection Distance	- 1.8M ~2.5M
Criteria	- Check any abnormal color, line distortion or any noise on the screen.

3. HDTV/ Component

Procedure	- Test equipment: DVD player
	- Test signal: Ycbcr/YPbPr
Inspection item	- HDTV performance test
Inspection Distance	- 1.8M ~2.5M
Criteria	- Check any abnormal color, line distortion or any noise on the screen.

4. HDMI Test

Procedure	- Test equipment: DVD Player with HDMI output
	- Test signal: 720p,1080i
Inspection item	- HDMI performance test
Inspection Distance	- 1.8M ~2.5M

Criteria - Ensure if the image is well performed and the color can not discolor

4-8 Optical Performance Measure

Inspection Condition
- Environment luminance: 10.0 Lux
- Product must be warmed up for 3 minutes
- Distances from the screen: 2.4 M
- Screen Size: 60 inches diagonal
- Reset to default before measurement

1. Test equipment

Procedure - Press “Power→Left→Left→Up”.
- Select “Spoke Test”

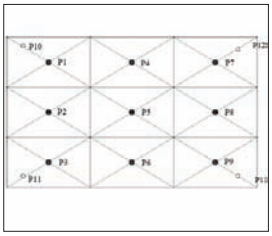
2. Brightness

Procedure - Full white pattern
- Use CL100 to measure brightness values of P1~P9.
- Follow the brightness formula to calculate brightness values.

☼ Brightness Formula

Avg.(P1~ P9)x1.1m^2

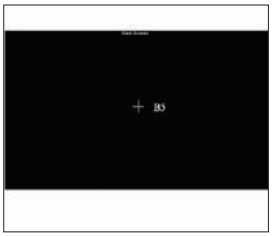
Criteria - 800 lumens



Full white pattern

3. Ful On/Full Off Contrast

Procedure - Full white pattern & full black pattern
- Use CL100 to measure brightness values of full white pattern P5 & full black pattern B5 (see image: full white)



Full black pattern

- Follow Contrast formula to calculate contrast values.

☼ Contrast Formula

P5/B5

note: P5=center of white image

B5=center of black image.

Criteria

- 1000:1(for EX330/EX330(1W))
- 550:1 (for EW330/EW330(1W))

4. Uniformity

Procedure

- Full white pattern
- Use CL100 to measure brightness values of P1~P9 (see image: full white).
- Follow the Uniformity formula to calculate average values.

☼ Uniformity Formula

$$\text{ANSI Uniformity} = \frac{\text{Avg. (P1, P3, P7, P9)}}{\text{P5}} \times 100\%$$

Criteria

- 65%

4-9 Others

1. Functional Inspection

Keypad button

- All keypad buttons must operate smoothly.

General

- All OSD functions must be checked for functionality. When OSD menu is displayed, there shall be no visible peaking, ringing, streaking, or smearing artifacts on the screen.

Factory Default	- The factory settings (with appropriate centering, size, geometry distortion, etc.) shall be displayed upon “Recall” is selected from OSD
Display Size	- All preset modes shall expand to full screen size using OSD Horizontal and Vertical Size controls
Display Data Channel (DDC)	- The purpose of the DDC test is to verify the DDC1/DDC2B operation of the projector and to verify Plug & Play function.
Acoustic	- High pitch sound from cooling fan and color wheel is unacceptable.

2. Check points for exterior and print pattern

Check item	Check point
Text & Pattern	Missing letters & pattern or blurry prints are unacceptable.
Exterior	Dirt, scrape, water ripples and uneven color are unacceptable.
Buttons	Stuck buttons are unacceptable.
Focus ring	Focus ring is functioning smoothly.
Logo	Missing logo, missing prints and blurry prints are unacceptable
Screw	All screw sure be fixed and in right type.
Pedestal	Well-functioned
Lamp Cover	It should be locked in the correct place.
Plastic Parts	All plastic parts can not be brocken and damaged.
Safety or warning label	All safety and warning label should be visible, including all contents.
Connector	All interface connector should be complete and workable.

Chapter 5

Firmware Upgrade

5-1 Equipment Needed

Software : (DDP 2230- USB)

- DLP Composer
- Firmware
- Library file (library file has to put in PC and set right path in 5-4 step 4)

Hardware :

- Projector
- Power cord:42.50115G001
- USB Cable:42.00280G001
- PC or Laptop

Note: The FW upgrade procedure for EX330/EW330/EX330(1W)/EW330(1W)is the same, we take EX330 as an example here.

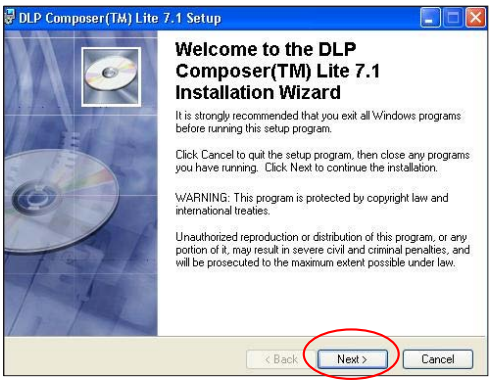
5-2 DLP Composer Lite Setup Procedure

1. Choose “DLP Composer Lite V7.1 Setup” Program.

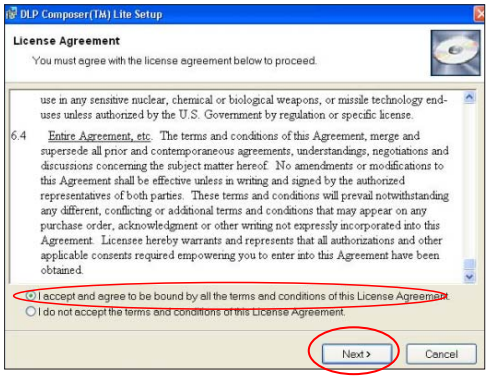
2. Click “Next” button.

3. Read “License Agreement”.

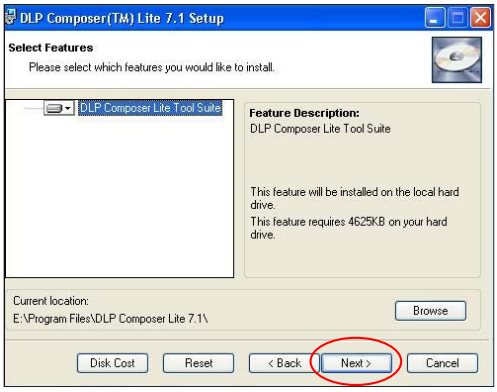
   - Choose “I accept and agree to be bound by all the terms and conditions of this License Agreement”.
   - Click "Next" button.



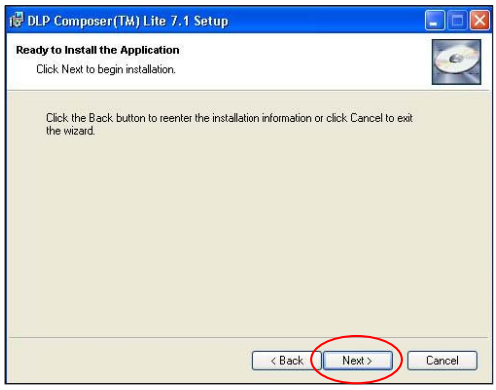
4. Click “Next” button.



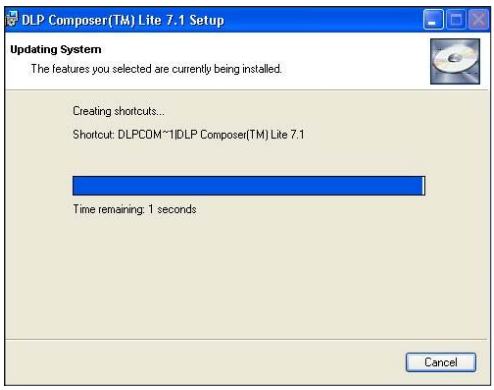
5. Click “Next” button.



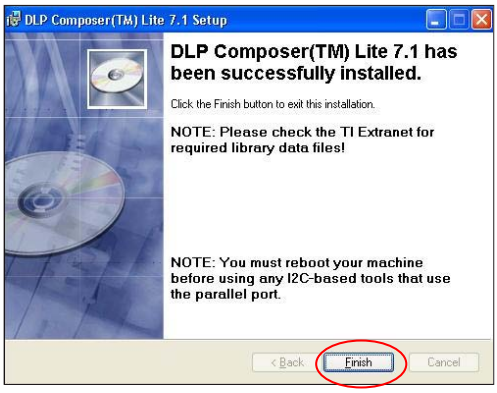
6. Click “Next” button.



7. The program is executing"Initializing"status



8. Click “Finish”.



5-3 USB Driver Upgrade Procedure

1. Set up

   - Connect the Projector with PC by USB cable.
   - It will show as the right picture.
   - Select the item as red circle show.
   - Click "Next" button.

2. Installation

   - Cilck “Finish“ and then the USB driver has been set up successfully.

5-4 Firmware Upgrade Procedure

1. Set-up

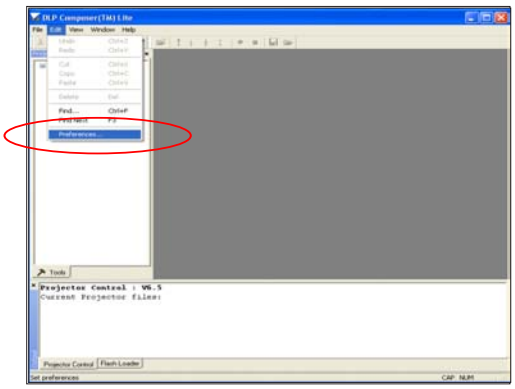
   - Hold on "Menu" button,then plug in power cord to the projector, the lamp and temp LED will light up.

   - Plug in USB cable into the projector and link to the USB port of PC

Note: The system fan and the light will not operated.

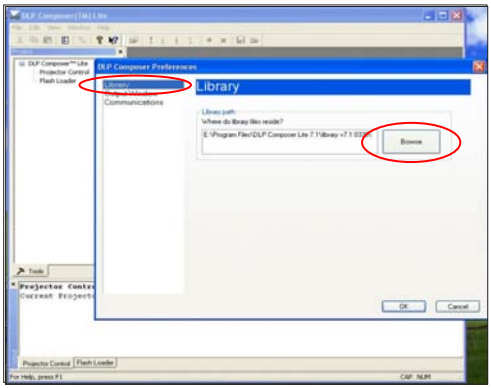
2. Execute the “DLP Compose™” file.

3. Click “edit” and “perferences”.



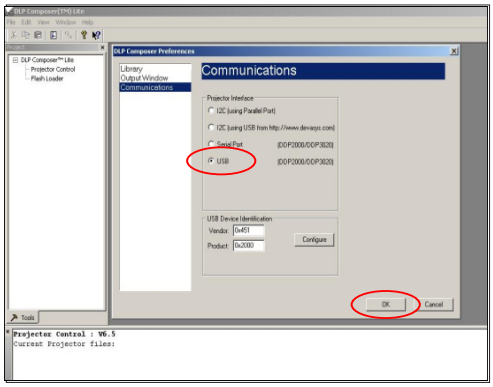
4. Click “Library”.

   - Click the "browse" button and navigate to the directory where you put the Library files in.



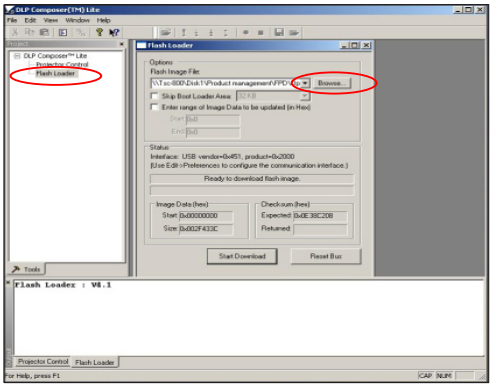
5. Select “Edit\preferences\Communications”

- Choose “USB”. Click “OK”.



6. Choose “Flash Loader”.

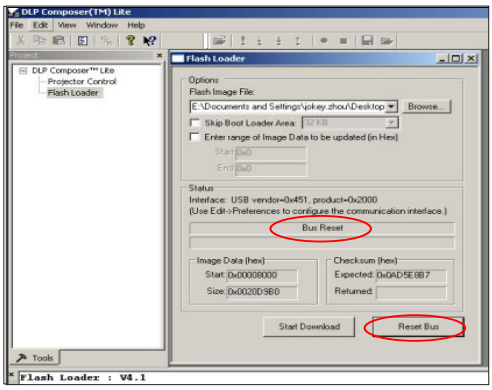
- Click “Browse” to search the firmware file



7. Click “Reset Bus” to erase the flash memory

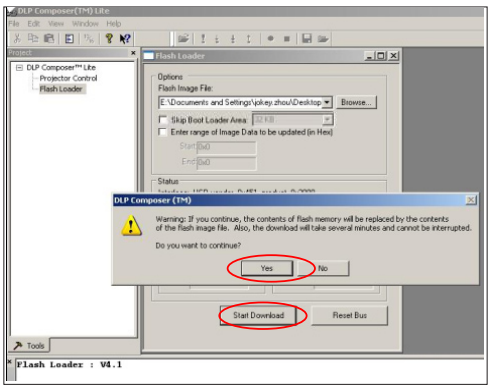
- it will show "Bus Reset" on screen

Note: If the error message“cannot open USB driver - No projectors found” appears, please unplug the USB Cable and replug, then check Driver. Finally,Repeat procedure 7. Click “Reset Bus” to erase the flash memory.

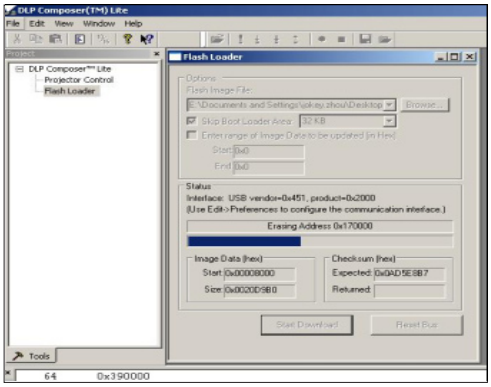


8. Click “Start download” to process the Firmware upgrade.

- Click “Yes” to erase the flash memory.



9. Proceeding Picture.

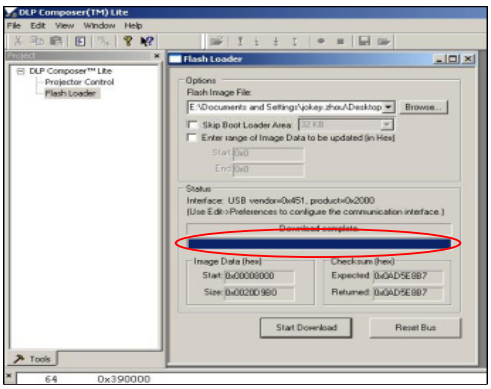


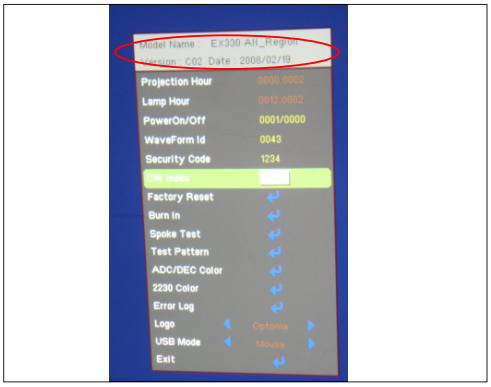
10. When firmware upgrade process is finished, it will show "Download complete" on screen.

- Unplug USB cable and power cord and replug in power cord.

11. Restart the unit and enter the Service mode to check the firmware version.

(To enter Service mode, please refer to Chapter 4 Function Test and Alignment Procedure.)





Chapter 6

EDID Upgrade

6-1 EDID Introduction

Extended Display Identification Data is a VESA standard data format that contains basic information about a display device and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the monitor name and serial number.

The information is stored in the display and is used to communicate with the system through a Display Data Channel (DDC), which sites between the display device and the PC graphics adapter. The system uses this information for configuration purposes, so the monitor and system can work together.

Note: If a display device has digital input ports, like DVI or HDMI, but without EDID in its main board, the display device will show no image while the input source is digital signal.

The EDID Upgrade procedure for EW330/EX330/EW330(1W)/EX330(1W)is the same, we take EX330 for example here.

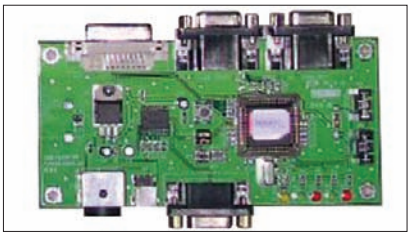
6-2 Equipment Needed

Software

- EDID Program (Generic V0.51)
- EDID File *.ini

Hardware

- Projector
- Generic Fixture :80.00001.001 for EDID Key-in (Fixture: JP3 must be closed)
- Power cord : 42.53506G002
- RS-232 Cable (pin to pin, F-M) : 42.83C07G001
- Monitor
- PC
- DVI cable : 42.83N06G001
- VGA cable : 42.87305G102
- Power adapter for fixture : 47.57803G001
- DVI adapter for HDMI :42.82B13G001



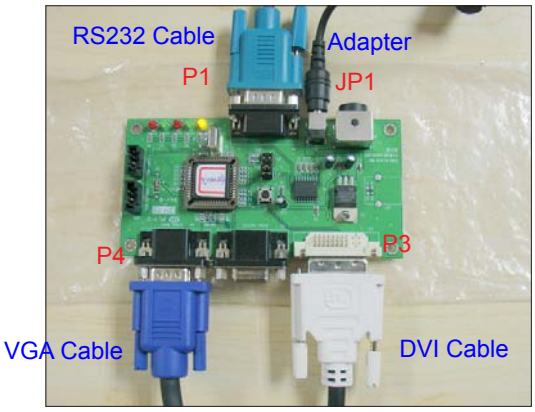




6-3 Setup Procedure

1. Connect all ports
   - Power adapter to fixture JP1
   - Fixture P1 to PC COM1 Port
   - Fixture P4 to Projector analog port
   - Fixture P3 to Projector digital port
   - Power on fixture

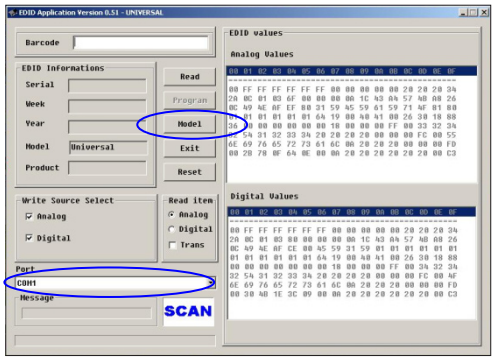
Note: JP3 is closed in all procedure.

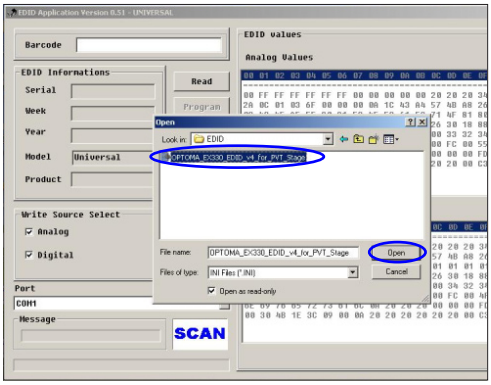


6-4 EDID Key-In Procedure

1. Click on "EDID" to execute EDID program

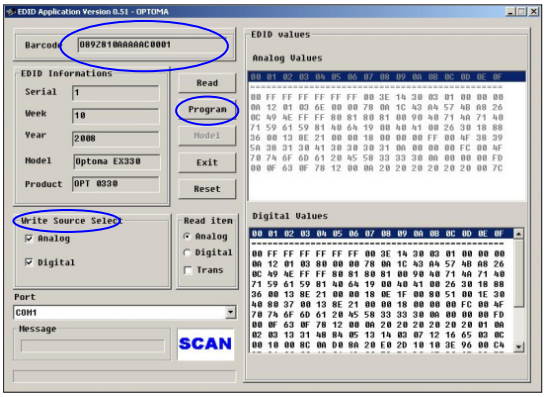
2. Choose model
   - In the port selection bar, please choose the port that you use. Example: if you use "COM1", choose COM1 in the port selection.
   - Click on "Model".
   - Choose the EDID that responses to the model that you choose.





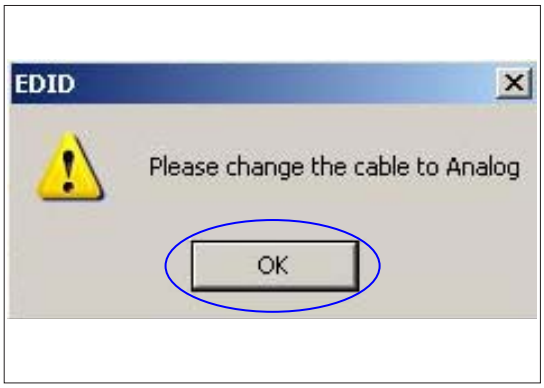
3. Programming

   - Key in the serial number into the barcode blank space.
   - In "Write Source Select", make a check in “Analog” and “Digital”.
   - Click "Program".



4. Change the cable to VGA

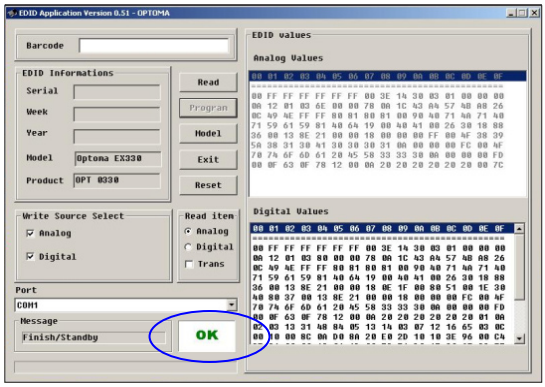
   - Message box appears on the screen, then click "OK".



5. Change the cable to HDMI

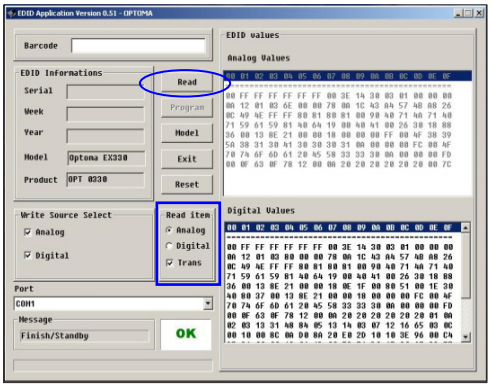
   - Message box appears on the screen,plug DVI Cable to connect to adapter then plug in HDMI port. After finish above action, click “OK.”

6. When the EDID program is completed, a message "OK" will appear on the screen.



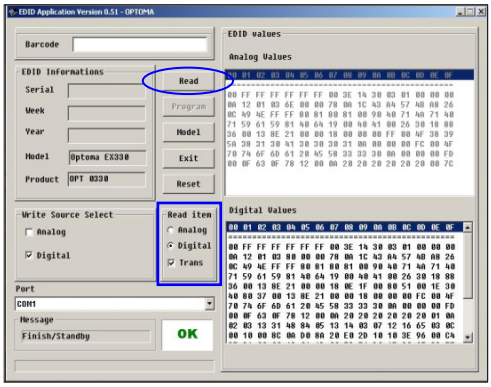
7. Read EDID "Analog" information

   - In the Read item,select "Analog" and "Trans",then click the "Read" button.

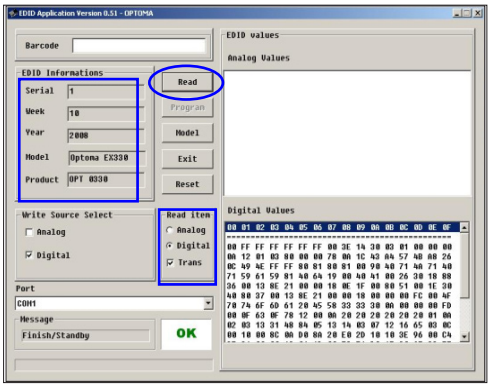


8. Read EDID "Digital" information

   - If EDID's information is correct,select "digital" and "Trans" in the Read item,then click the "Read" button.

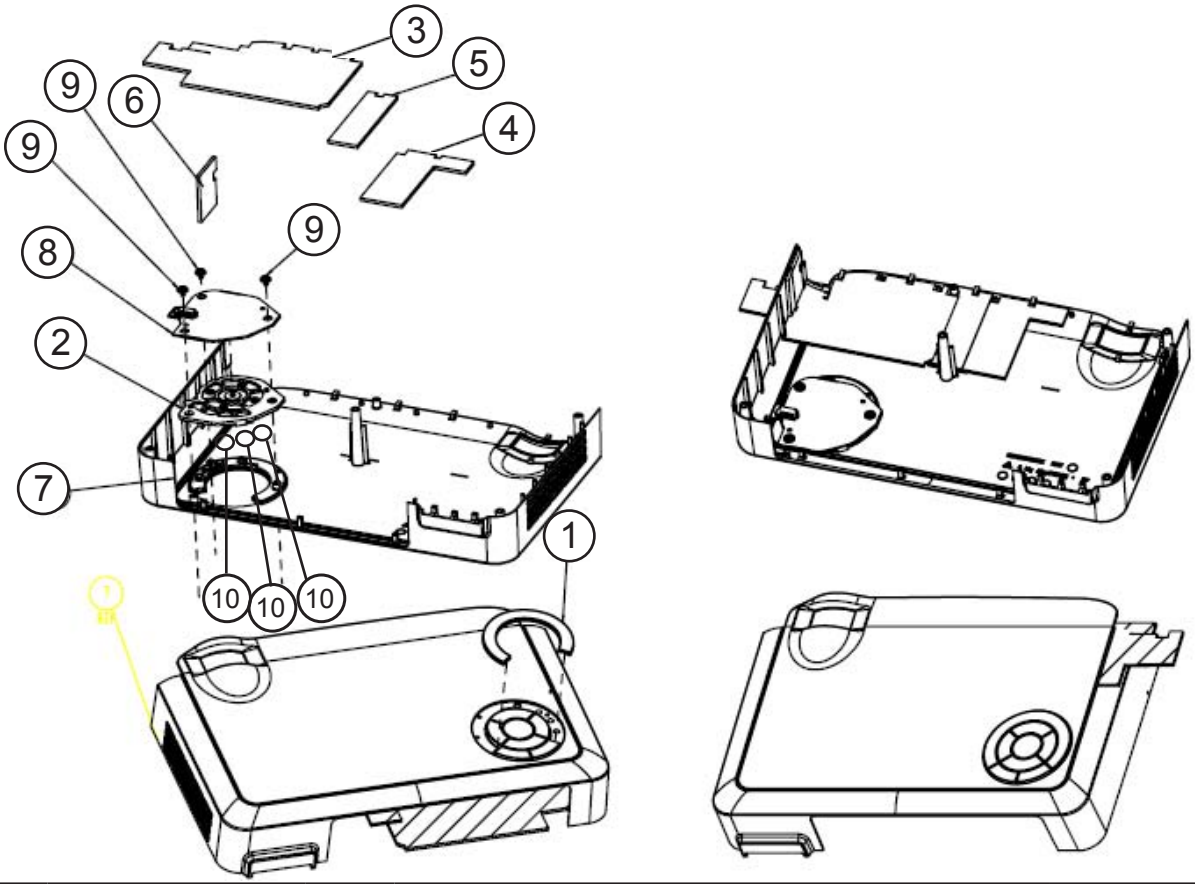


9. EDID informations will show the result.



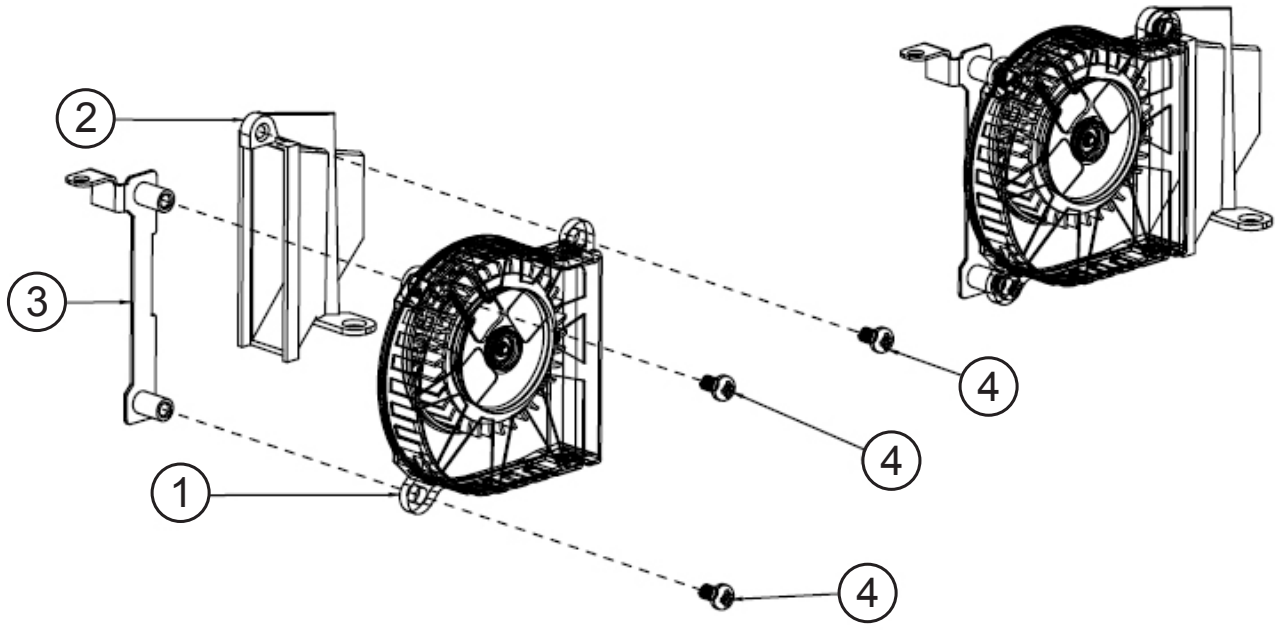
Appendix A(Exploded Image)

Assy Top Cover Module EX330



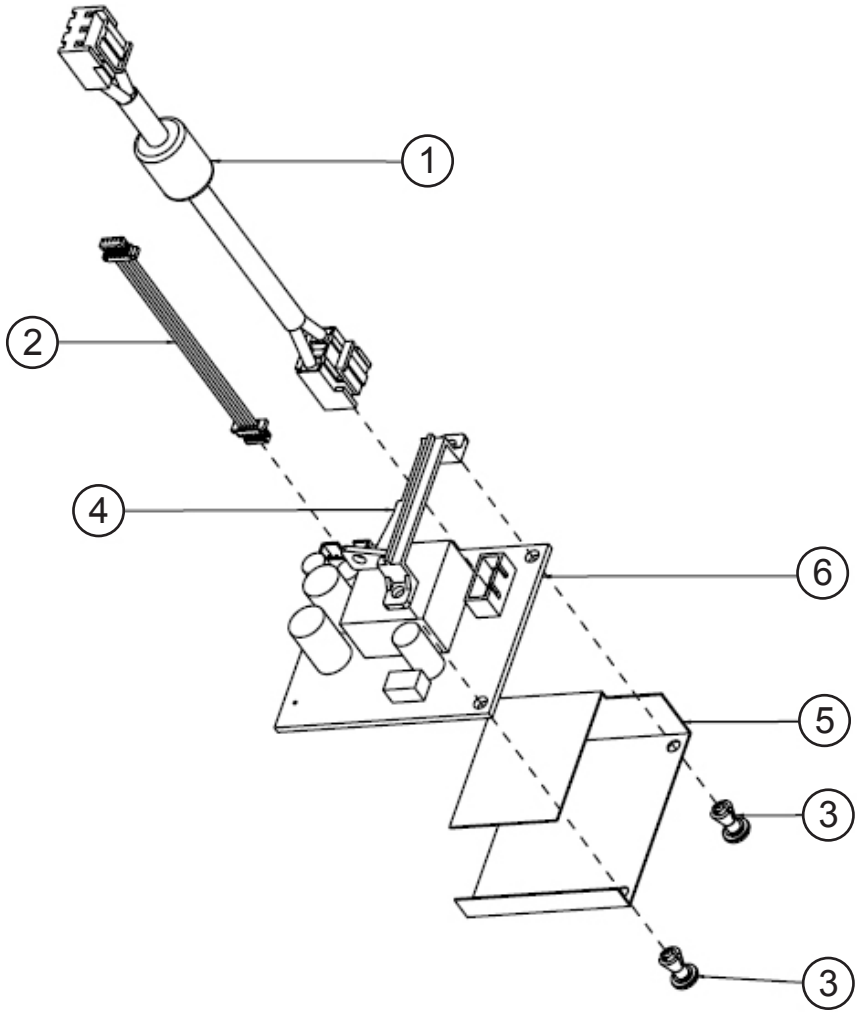
item	P/N	Rev	Description	Parts Supply
1	51.89Z07G001	C	LED LENS KEYPAD PC EX330	
2	52.89Z04G001	C	TOP COVER SILICON LEFT EX330	
3	52.89Z05G001	C	TOP COVER SILICON RIGHT EX330	
4	52.89Z06G001	C	TOP COVER SILICON RUBBER EX330	
5	61.89Z01G001	D	TOP COVER EX330	V
6	51.89Z11G011	A	KEY BUTTON P+R EX330 (BLACK+SILVER)	
7	52.89Z09G001	A	DMD THERMAL PAD 52*6*2.5t FUJIPOLY SARGON GR-d	
8	80.89Z03G001	D	PCBA KEYPAD BD FOR EX330	V
9	85.1D122G030	A	SCREW PAN MECH M2*3 Ni(W/WSHER Φ5.0)	
10	87.FL000G003	A	WASHER FLAT 5.0*2.4*0.3 MYLAR	

Assy Blower Module EX330



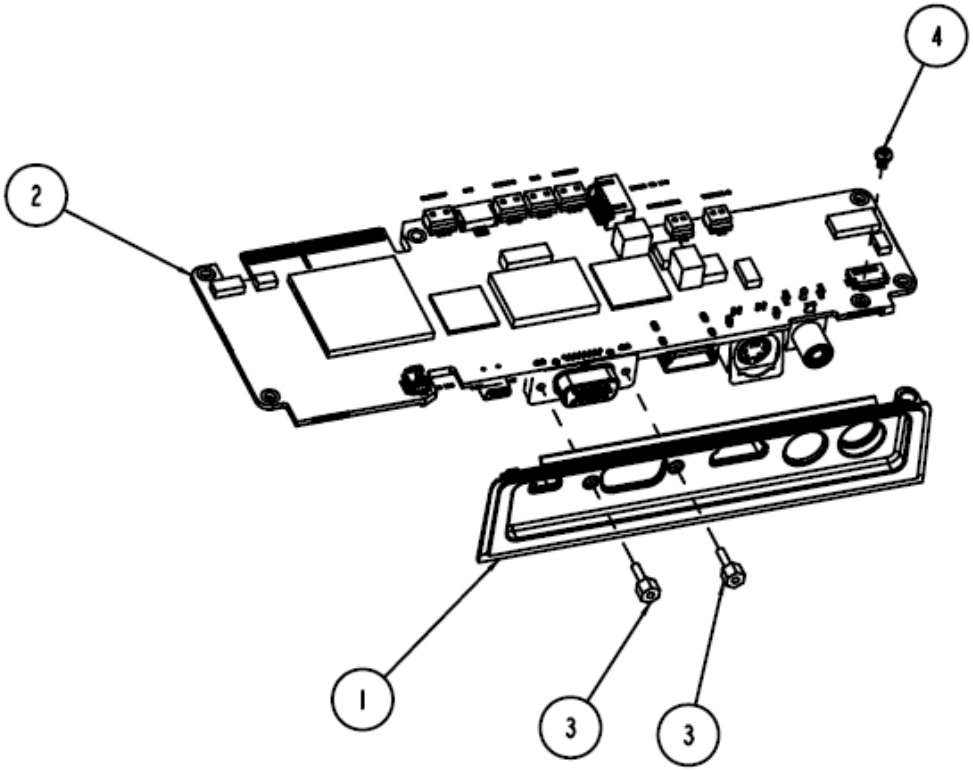
item	P/N	Rev	Description	Parts Supply
1	49.89S01G001	A	LAMP BLOWER / 45*45*10 mm, 60mm	V
2	61.89S11G001	A	LAMP BLOWER 4510 DUCT AL M209X	
3	61.89S13G001	A	BLOWER 4510 HOLDER SECC M209X	
4	85.1A126G040	A	SCREW PAN MECH M2.6*4 Ni	

Assy DC-DC Module EX330



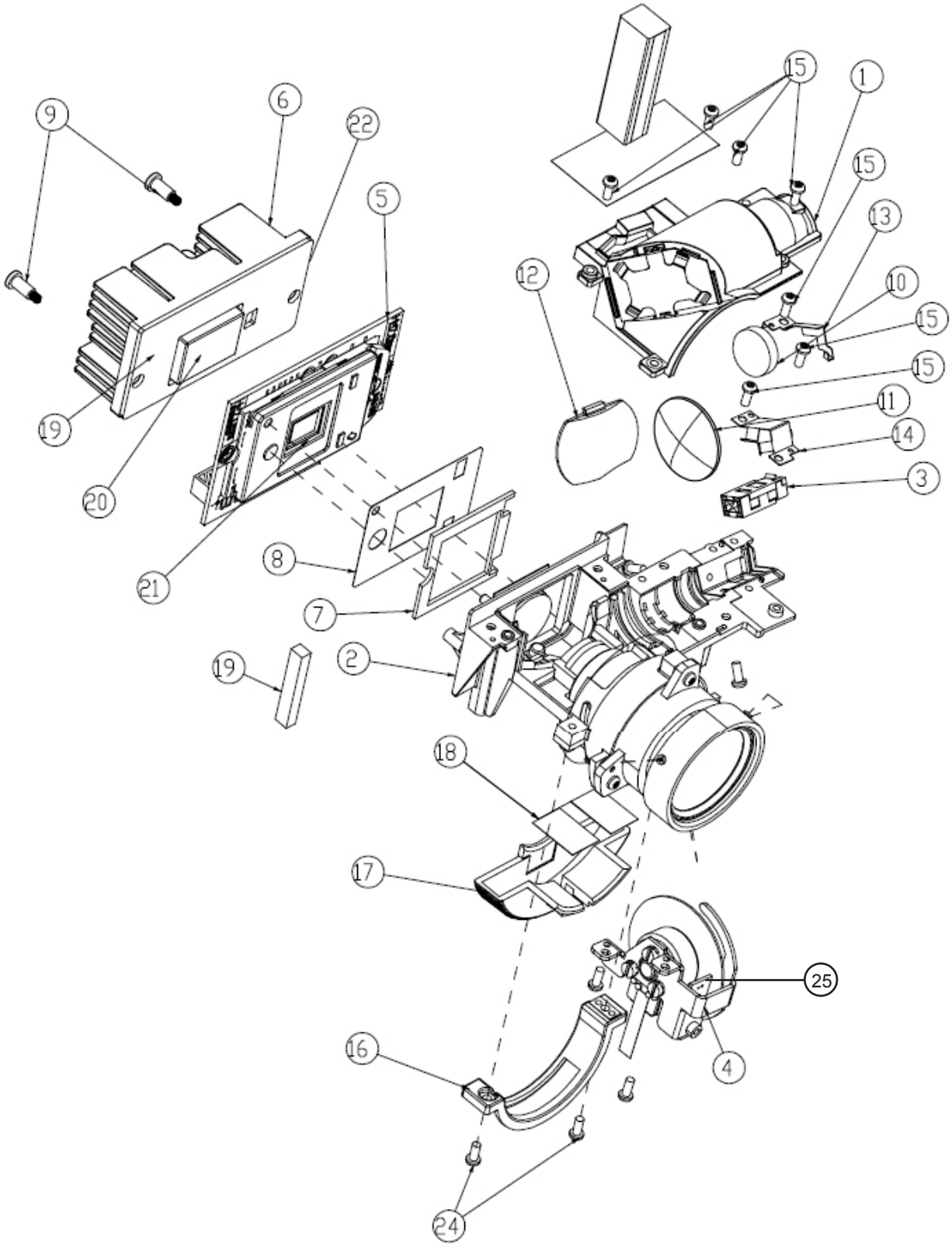
item	P/N	Rev	Description	Parts Supply
1	42.004A1G001	E	W.A. 4P #24/#26 110mm DC_DC/BALLAST M209X	
2	42.004B1G001	A	W.A. 5P #26 140mm DC-DC/MAIN BOARD M209X	
3	51.00061G001	A	PLASTIC RIVET φ3.0 SR-3L	
4	51.89S17G001	A	DC HOLDER PC M209X	
5	51.89S23G001	C	DC-DC MYLAR M209X	
6	75.89S08G002	A	ASSY MatriTek D2D M209X	V

Assy I/O Cover Module EX330



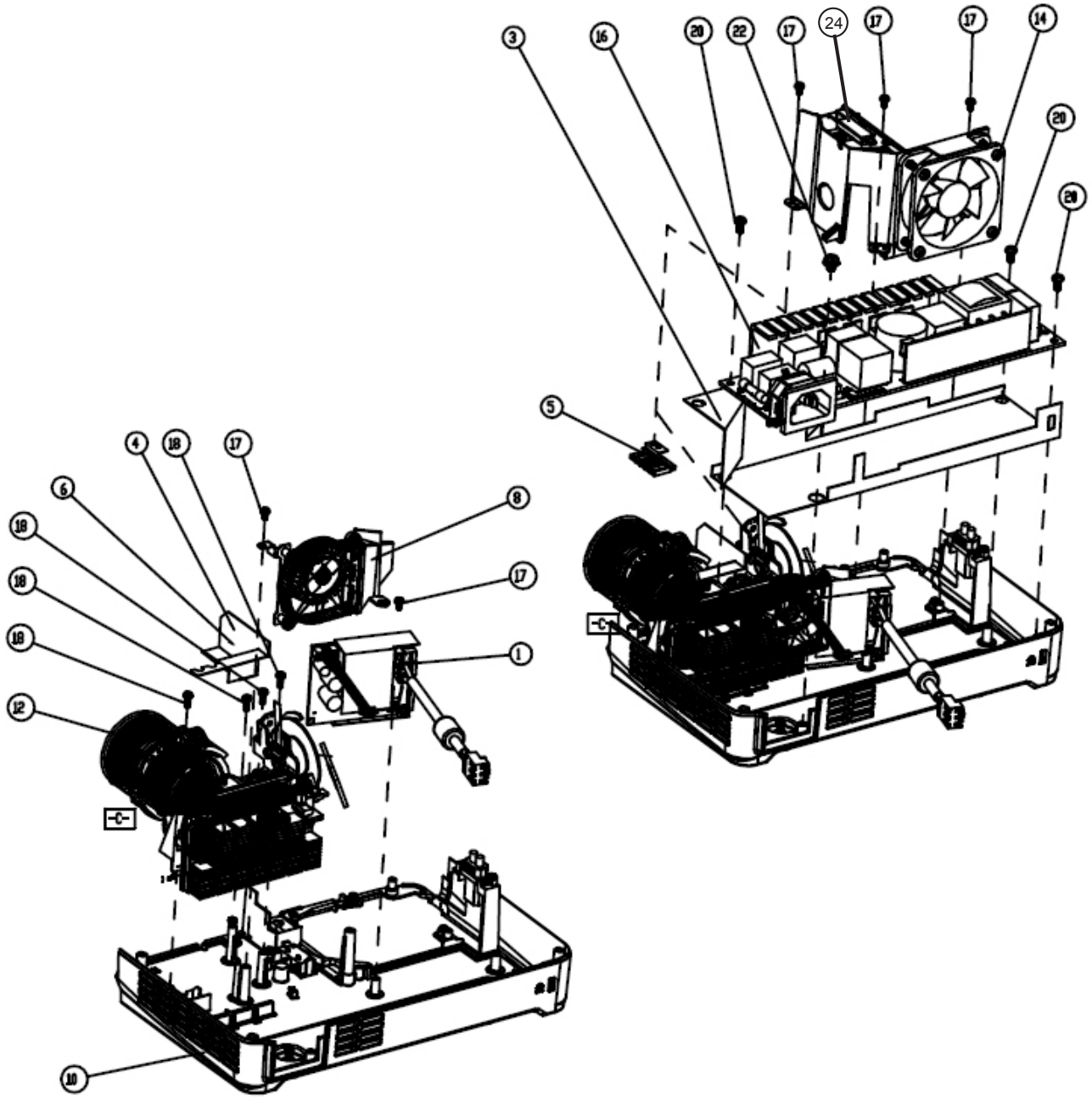
item	P/N	Rev	Description	Parts Supply
	70.89Z16GR01	C	ASSY IO COVER MODULE EX330(SERVICE)	V
1	51.89Z10G001	C	IO COVER EX330	
2	80.89SP2GD01	A	PCBA MAIN BOARD H/I ASS'Y X15-DD25A	V
3	85.005AGG075	A	SCREW HEX I/O #4-40*H5*L7.5 Ni NYLOK	
4	85.1A126G040	A	SCREW PAN MECH M2.6*4 Ni	

Assy Optical Engine Module EX330

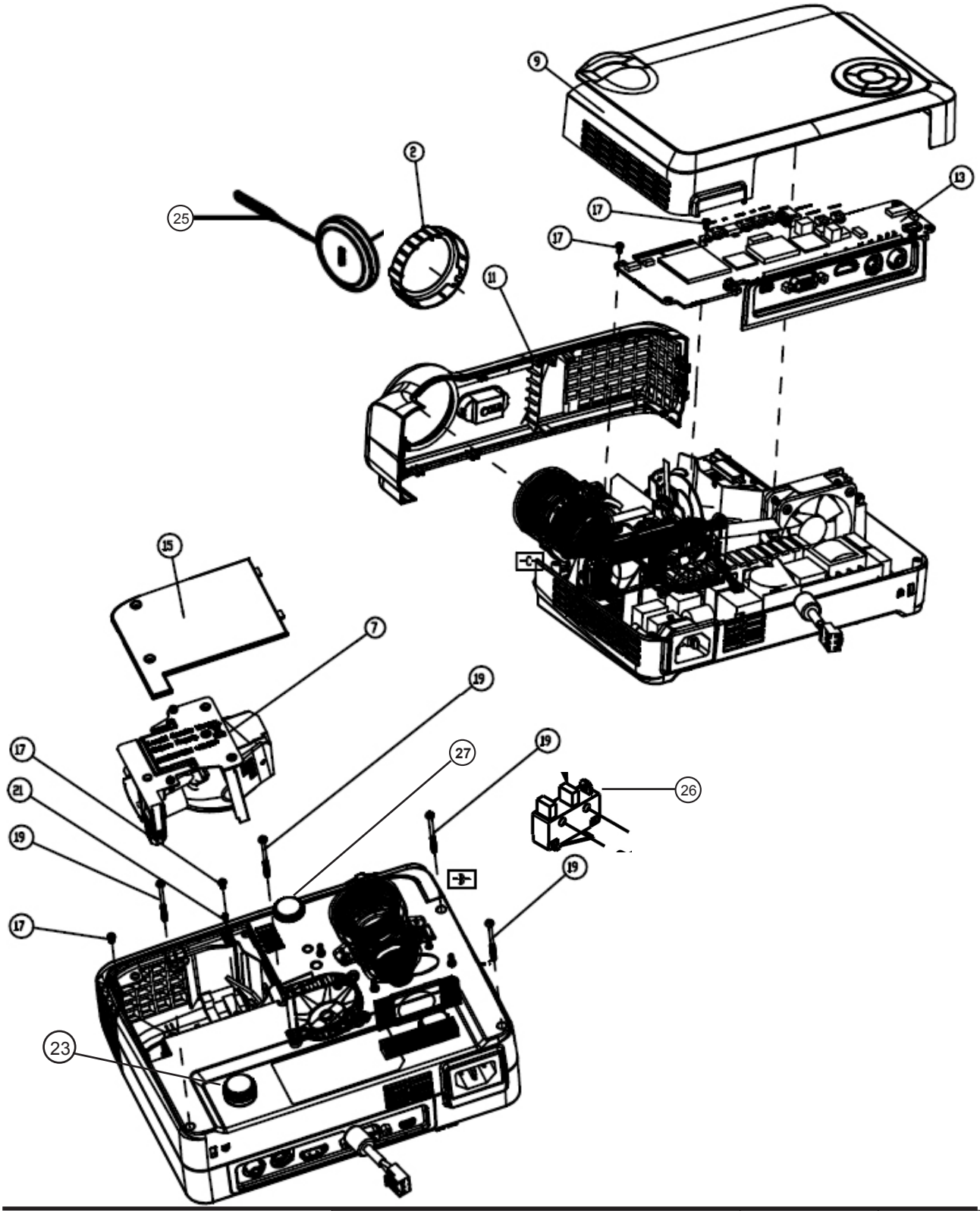


item	P/N	Rev	Description	Parts Supply
1	70.89Z12G001	A	ASSY ENGINE BOTTOM COVER EX330	
2	70.89Z06G001	A	ASSY ENGINE BASE MODULE EX330	
	70.89S21GR01	A	ASSY ROD MODULE M209X (SERVICE)	V
3	70.89S12G001	A	ASSY ROD MODULE M209X	
	70.88N19GR01	A	ASSY COLOR WHEEL MODULE EP721(RMA)	V
4	70.89Z09G001	A	ASSY COLOR WHEEL MODULE EX330	
5	80.89Z02G001	A	PCBA DMD BD FOR EX330	V
6	61.89S10G001	A	DMD HEATSINK AL M209X	
7	52.88N04G001	A	DMD RUBBER,X15	
8	61.88N15G001	B	DMD MASK SUS301,X15	
9	85.4A826G118	A	STEP SCREW FOR TYPEX DMD M2.6*11.8mm,X15	
10	23.88N20G001	A	YO CONDENSER1 FOR X15	
11	23.88N20G011	A	YO CONDENSER2 FOR X15	
12	23.88N06G001	A	YO PLASTIC RELAY FOR X15	
13	61.88N13G002	A	ROD COVER NEW SUS301 X15	
14	61.88N12G001	C	ROD SPRING SUS301,X15	
15	85.1A526G060	A	SCREW PAN MECH M2.6*6 Ni NYLOK	
16	51.89Z04G001	C	ZOOM RING FIXED HOLDER EX330	
17	51.89Z05G001	C	ZOOM RING EX330	
18	51.89Z19G001	C	ZOOM RING TEFLON EX330	
19	52.88N03G002	A	HEAT SINK RUBBER(X15) X1160	
20	52.87J01G001	A	DMD THERMAL PAD 25*17*0.5t FUJIPOLY SARGON GR-Hn	
21	48.87M01G001	A	DMD Type-X 1024x768 PIXEL 0.55” XGA LVDS “TI”	V
22	85.00026G068	A	HEX SCREW M2.6*H6.8*L5, AL	
23	41.82K09G001	A	EMI TAPE 30*50mm	
24	85.0A126G040	A	SCREW DOUBLE FLAT MECH M2.6*4Ni	
25	80.89U04G001	A	PCBA PHOTO SENSOR BOARD FOR EP720	V

D.C. EX330(A)

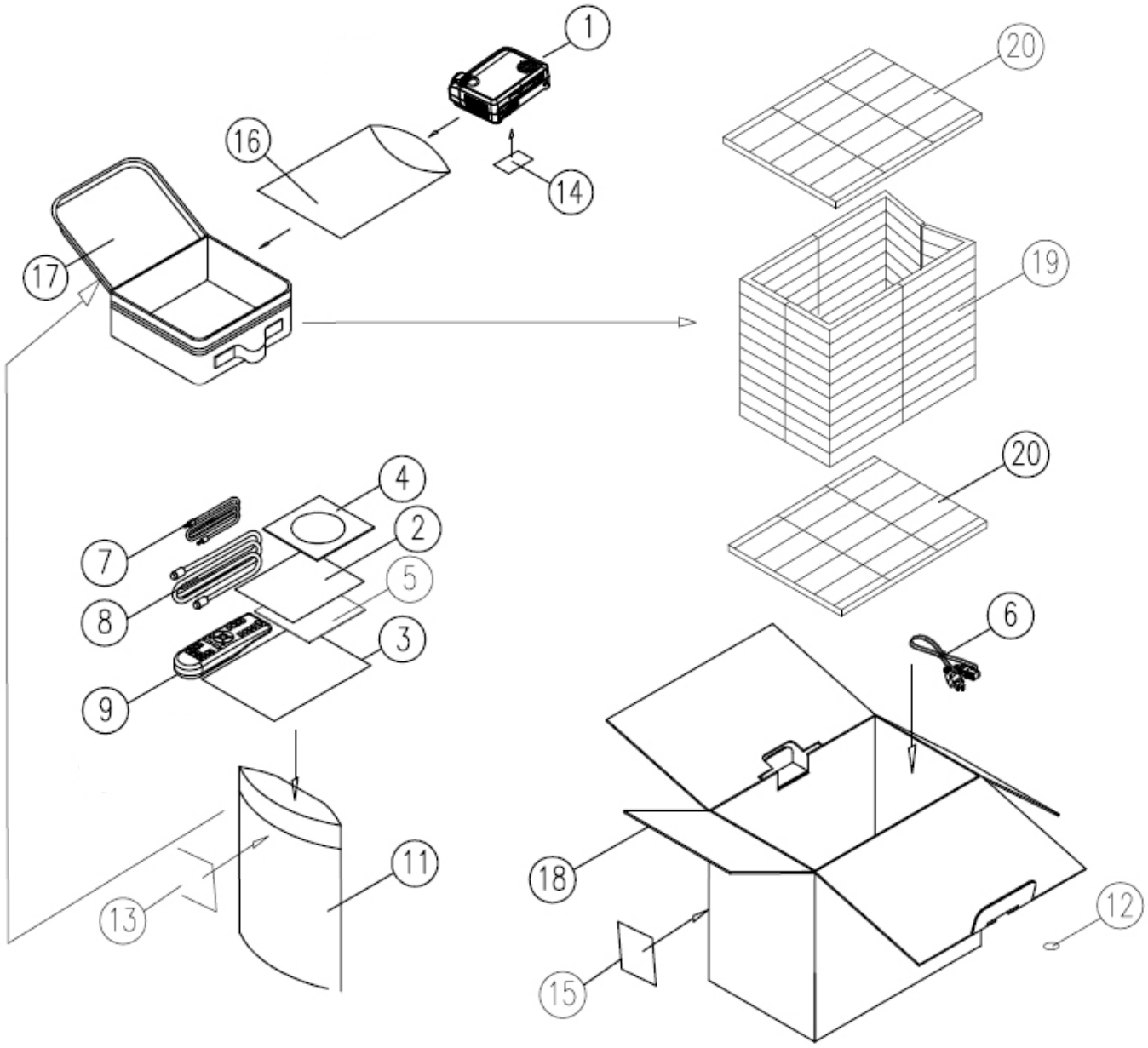


D.C. EX330(B)



item	P/N	Rev	Description	Parts Supply
1	70.89Z07G001	A	ASSY DC-DC MODULE EX330	
2	51.89Z03G001	C	FOCUS RING EX330	
3	51.89Z13G001	C	BALLAST MYLAR EX330	
4	51.89Z14G001	C	ZOOM RING MYLAR EX330	
5	61.89S25G001	A	COLOR WHEEL VENT SUS304 M209X	
6	52.89Z02G001	C	ZOOM RING SPONGE EX330	
7	SP.89Z01GC01	A	LAMP MODULE FOR PROJECTOR EX330	V
8	70.89S09G001	A	ASSY BLOWER 4510 MODULE M209X	
9	70.89Z01G001	A	ASSY TOP COVER EX330	
10	61.89Z02G001	A	BOTTOM COVER EX330	V
11	75.89Z03G001	A	ASSY FRONT COVER EX330	
	70.8GW08GR01	A	ASSY ENGINE MODULE EX330(1W)(SERVICE)	V
12	70.89Z04G001	A	ASSY OPTICAL ENGINE MODULE EX330	
	70.89Z16GR01	A	ASSY IO COVER MODULE EX330(SERVICE)	V
13	70.89Z05G001	A	ASSY IO COVER EX330	
14	49.85M03G001	A	SYSTEM FAN/55*55*15 mm	V
15	70.89Z10G001	A	ASSY LAMP COVER EX330	
	70.8FN19GR01	A	ASSY OSRAM BALLAST MODULE 165H4 LOW STANDBY FOR M210X(SERVICE)	
16	75.8FN01G001	B	ASSY OSRAM BALLAST 165H4 Low standby	V
17	85.1A126G040	A	SCREW PAN MECH M2.6*4 Ni	
18	85.1A326G060	A	SCREW PAN HEAD MECH M2.6*6 BLACK	
19	85.1A326G300	A	SCREW PAN MECH M2.6*30 BLACK NYLOK	
20	85.1A523G060	A	SCREW PAN MECH M3*6 NYLOK, GREEN	
21	85.1A621G030	A	SCREW MECH M1.7*3 BLACK NYLOK	
22	85.1C224G050	A	SCREW PAN MECH M4*5 COLOR W/TOOTH WASHER	
23	52.89Z01G001	A	REAR ADJUST FOOT EX330	
24	43.89Z01G001	A	THERMAL SWITCH WITH BRACKET (KLIX-ON YS11) 100deg. C 70mm	
25	75.89Z04G001	A	LENS CAP MODULE EX330	
26	75.89Z01G001	A	ASSY INTERRUPT SWITCH MODULE EX330	V
27	75.89Z06G001	A	BUY ASSY ADJUST FOOT EX330	

D.P. EX330



item	P/N	Rev	Description	Parts Supply
1	DC.89Z01G00E	A	D.C. EX330 EUROPE	
2	36.00006G003	A	WARRANTY CARD,TWN.GREEN	
3	35.52302G091	A	LABEL CARTON 108*92 BLANK	
4	36.8GW01G001	A	USER'S GUIDE MULTILINGUAL (CD) EX330	V
5	36.89Z02G001	A	QUICK START CARD MULTILINGUAL OP-TOMA EX330	
6	42.50112G001	A	CABLE POWER CORD 1830mm SP-023+IS14 EUR. GREEN	
7	42.00200G002	A	CABLE VGA 15P 1.8M BLK EP739	
8	42.00283G001	A	CABLE USB-MINI TO USB-A 2.0M BLACK	
9	45.89Z01G001	A	REMOTE CONTROLLER EX330	V
11	51.86213G002	A	PE BAG ZIPPER #9 W/RECYCLING MARK FOR OPTOMA	
12	35.00040G001	A	LABEL 30mm,GREEN	
13	35.82001G111	A	AK LABEL 3"*3" BLANK	
14	35.89Z01G001	C	SPEC LABEL EX330	
15	35.89Z02G001	D	LENS CAP LABEL EX330	
16	51.00219G001	A	PE BAG 330*245*0.07mm M209X	
17	53.89Z01G101	A	SOFT CARRY BAG EX330	V
18	55.89Z01G001	A	CARTON OUTSIDE BOX AB FLUTE EX330	V
19	56.89Z01G001	A	AIR BAG RIM EX330	
20	56.89Z02G001	A	AIR BAG TOP/BOTTOM EX330	
22	51.52121G001	A	PEBAG ZIPPER #3 100*70*0.04 L	

Appendix B

I. Serial Number System Definition

Serial Number Format for Projector

Q	89Z	8	10	AAAAA	C	0001
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) : **Q = Optoma**

(2) : **89Z = Project code**

(3) : **8 = Last number of the year (ex:2008 = 8)**

(4) : **10 = week of the year (ex:the ten week of the year = 10)**

(5) : **AAAAA = not-defined**

(6) : **C = Manufacture factory (CPC)**

(7) : **0001 = Serial code**

EX: Q89Z810AAAAAC0001

This label represents the serial number for EX330. It is produced at CPC on ten week of 2007. Its serial code is 0001.

II. PCBA Code Definition

PCBA Code for Projector

A	B	XXXXXXXXXX	C	XXX	EEEE
1	2	3	4	5	6

C: M/B

1 : ID **B:DMD/ B**

2 : Vendor Code

3 : P/N

4 : Revision

5 : Date Code

6 : S/N